Appendix

APPENDIX A

NURSING ASSESSMENT

Check: _____Primary Address _____Related Date:_____

Child's Name:_____ DOB:_____

Parent's Name:_____ Test date:_____ BLL:_____

Address:_____

Telephone: Home:_____ Work:_____

No. of Children in Home < 6 yrs.:_____ Child length of Residence:_____

If < 6 months, Prior Address(es):_____

Private Medical Doctor:_____
Insurance: Kind and Policy #_____

What other homes does your child visit? (include: home of relatives, friends, neighbors, babysitters)
Person Visited:_____Address:_____
Phone #:_____How often?_____
Person Visited:_____Address:_____
Phone #_____How often?_____

_____None	_____Constipation	_____Hyperactivity	_____Convulsions
_____Nausea	_____Anorexia	_____Muscular Weakness	_____Restlessness
_____Vomiting	_____Lethargy	_____Irritability	_____Diarrhea
_____Anemia	_____Headaches	_____Unusual Behavior	_____Fainting
_____Other	_____Specify:_____		

Date Symptoms First Noticed:_____

Is Child taking iron now? _____Yes _____No
Has he/she taken iron in the past? _____Yes _____No

Number Of Children In Household:_____ Under six years old:_____

	NAME	DOB	TESTED FOR PB	RESULTS
1.				
2.				
3.				
4.				
5.				

Any Children With Special Needs (Handicapped)?_____

General Observation Of Dwelling Unit:
Peeling Paint: Yes_____ No_____ Interior_____ Exterior_____
Overall Upkeep Of Interior: Good_____ Fair_____ Poor_____
Housekeeping Practice: Good_____ Fair_____ Poor_____

1. Does the child eat, chew, or suck on:

____Plaster	____Newspapers, comics, magazines	____Doors
____Paint Chips	____Dirt	____Moldings
____Cigarette butts	____Toys	____Guard Rails
____Cigarette ashes	____Furniture (crib-bed)	____Metal Objects
____Matches	____Thumb or Fingernail	____Window Sill
____Mini-blinds		

2. Where does child sleep?_____
   Is there chipping paint, broken plaster, peeling wallpaper or mini-blinds near the child's bed that can be easily reached or that can fall into it?
   _____Yes _____No; If yes, specify_____

3. Does your child take painted metal, or printed objects to bed with him/her?
   _____Yes _____No; If yes, specify:_____

4. Is there any area where the child is during the day or night where he/she could breathe car exhaust, other noticeable vapors, dust fumes or odors? i.e. (domestic trash burning, commercial, industrial exhaust fumes from stoves or fireplaces)(source of wood).
   _____Yes _____No; If yes, specify:_____

5. Live with an adult whose job of hobby involves exposure to lead (examples: highway construction, smelting/refining, automotive repairs, pottery, etc.)?
   _____Yes _____No

6. What kind of pots, pans, and dishes do you use?_____
   i.e. (lead, soldered pots, pans, utensils, ceramics, pottery)
   What do you store food in? Cans – pewter?_____
   What kind of cup does you child drink from?_____

7. Do you have a garden?_____ Where located?_____

8. Is there loose paint on wall/ceilings where food is prepared, the child eats, or where the child plays?

   _____Yes _____No; If yes, specify:_____

9. What is you child's favorite place to play or hide?
   Indoors?_____
   Outdoors?_____

10. Has this home had any renovations in the last 6 months? _____Yes _____No

Date referred to Environmental Health Specialist:_____

Nurses Signature:_____

Appendix B-Building Condition Form 5.1

Condition	Yes	No
Roof missing parts of surfaces (tiles, boards, shakes, etc.)		
Roof has holes or large cracks		
Gutters or downspouts broken		
Chimney masonry cracked, bricks loose or missing, obviously out of plumb		
Exterior or interior walls have obvious large cracks or holes, requiring more than routine pointing (if masonry) or painting		
Exterior siding has missing boards or shingles		
Water stains on interior walls or ceilings		
Plaster walls or ceilings deteriorated		
Two or more windows or doors broken, missing, or boarded up		
Porch or steps have major elements broken, missing, or boarded up		
Foundation has major cracks, missing material, structure leans, or visibly unsound		
* Total number		

* If the “Yes” column has two or more checks, the dwelling is usually considered to be in poor condition for the purposes of a risk assessment. However, specific conditions and extenuating circumstances should be considered before determining the final condition of the dwelling and the appropriateness of a lead hazard screen.

Notes:

Paint Conditions on Selected Surfaces
(Single-Family, Owner-Occupied)

Building component	Location Notes	Paint condition (deteriorated or intact)	Deterioration due to friction or impact?	Deterioration due to moisture?	Location of painted component with visible bite marks
Building siding					
Exterior trim					
Exterior windows					
Exterior doors					
Railings					
Porch floors					
Other porch surfaces					
Interior doors					
Ceilings					
Walls					
Interior windows					
Interior floors					
Interior trim					
Stairways					
Radiator (or radiator cover)					
Kitchen cabinets					
Bathroom cabinets					
Other surfaces:					

If the overall condition of a component is similar throughout a dwelling, that condition should be recorded. If a component in a couple of locations is in poor condition, but the overall condition is good or fair, the specific sites of the badly deteriorated paint should be noted. The specific locations of any component with bite marks should be recorded.

Appendix C

16.2 Resident Questionnaire for Investigation of Children With Elevated Blood Lead Levels

The results of this questionnaire will be used for two purposes:

- Φ To determine where environmental samples should be collected.
- Φ To develop corrective measures related to use patterns and living characteristics (e.g., flushing the water line if water lead levels are high, moving the pet's sleeping area if it appears the pet is tracking in leaded dust, and so forth).

The investigator should always recommend temporary measures to immediately reduce the child's exposure to lead hazards.

General Information

1. Where do you think the child is exposed to the lead hazard? _____

2. Do you rent or own your home? rent own (circle)

   If rented, are there any rent subsidies? yes no (circle)

   If yes, what type: (check)

   ___ Public housing authority

   ___ Section 8

   ___ Federal rent subsidy

   ___ Other (specify): _____

   Landlord Information (or rent collector agent)

   Name:_____

   Address:_____

   Phone: _____

3. When did you/your family move into this home?

   Complete the following for all addresses where the child has lived during the past 12 months:

Dates of residency	**Address (include city and State)**	**Approximate age of dwelling**	**General condition of dwelling: Any remodeling or renovation ? Any deteriorated paint**

4. Is the child cared for away from the home? (This would include preschool, day-care center, day-care home, or care provided by a relative or friend.)

   If YES, complete the following:

Type of care	Location of care (name of contact, address, and phone number)	Approximate number of hours per week at this location	General condition of structure. Any deterio-rated paint? Any recent remodeling or renovation?

Lead-Based Paint and Lead-Contaminated Dust Hazards

1. Has this dwelling been tested for lead-based paint or lead-contaminated dust? yes no (circle)

   If yes, when? Where can this information be obtained? _____

2. Approximately what year was this dwelling built? _____ If unknown, was the dwelling built before 1950? _____ _

3. Has there been any recent repainting, remodeling, renovation, window replacement, sanding, or scraping of painted surfaces inside or outside this dwelling unit? If yes, describe activities and duration of work in more detail. _____

4. Has any lead abatement work been conducted at this dwelling recently? yes no (circle)

5. Where does the child like to play or frequent? (Include rooms, closets, porches, outbuildings.)

6. Where does the child like to hide? (Include rooms, closets, porches, outbuildings.)

   Complete the following table:

Areas where child likes to play or hide	Paint condition (intact, fair, poor, or not present)*	Location of painted component with visible bite marks

* Paint condition: Note location and extent of any visible chips and/or dust in window wells, on window sills, or on the floor directly beneath windows. Do you see peeling, chipping, chalking, flaking, or deteriorated paint? If yes, note locations and extent of deterioration.

Assessment: (check)

_____ Probable lead-based paint hazard.

_____ Probable leaded dust hazard.

Action: (check)

_____ Obtain records of previous environmental testing noted above.

_____ XRF Inspection of dwelling (circle one): limited complete.

_____ Paint Testing—deteriorated paint: add any additional areas to Form 5.3.

_____ Leaded dust sampling of home: add any additional areas to the list of rooms to be sampled, using Form 5.4.

_____ Other sampling (specify): _____

Water Lead Hazards

1. What is the source of drinking water for the family? (circle) municipal water private well

   Other (specify): _____

   (This information will be used to help determine responsibility and methods of controlling lead exposures from water.)

   If tap water is used for drinking, please answer the following:

2. From which faucets do you obtain drinking water? (Sample from the main drinking water faucet.)
3. Do you use the water immediately or do you let the water run for awhile first? (If water lead levels are elevated in the first flush, but low in the flushed sample, recommend flushing the water after each period the water has remained standing in the pipe for more than 6 hours.)

   _____

4. Is tap water used to prepare infant formula, powdered milk, or juices for the children?

   If yes, do you use hot or cold tap water?

   If no, from what source do you obtain water for the children?

5. Has new plumbing been installed within the last 5 years? yes no (circle)

   If yes, identify location(s).

   Did you do any of this work yourself? yes no (circle)

   If yes, specify. _____

6. Has the water ever been tested for lead? yes no (circle)

   If yes, where can test results be obtained?

Determine whether the dwelling is located in a jurisdiction known to have lead in drinking water either public municipal or well water. Consult with State/local public health authorities for details. (check)_____ at risk _____ not at risk

Assessment: (check)

_____ At risk for water lead hazards.

Actions: (check)

_____ Test water (first-draw and flush samples).

_____ Other testing (specify): _____

_____ Counsel family (specify): _____

Lead in Soil Hazards

(Use the following information to determine where soil samples should be collected.)

1. Where outside does the child like to play?
2. Where outside does the child like to hide?
3. Is this dwelling located near a lead-producing industry (such as a battery plant, smelter, radiator repair shop, or electronics/soldering industry?) yes no (circle)
4. Is the dwelling located within two blocks of a major roadway, freeway, elevated highway, or other transportation structures?
5. Are nearby buildings or structures being renovated, repainted, or demolished?
6. Is there deteriorated paint on outside fences, garages, play structures, railings, building siding, windows, trims, or mailboxes?
7. Were gasoline or other solvents ever used to clean parts or disposed of at the property?
8. Are there visible paint chips near the perimeter of the house, fences, garages, play structures? If yes, note location.
9. Has soil ever been tested for lead? If yes, where can this information be obtained?
10. Have you burned painted wood in a woodstove or fireplace? If yes, have you emptied ashes onto soil? If yes, where?

Assessment: (check)

_____ Probable soil lead hazard.

Actions: (check)

_____ Test soil. Complete Field Sampling Form for Soil (Form 5.5). Obtain single samples for each bare soil area where the child plays.

_____ Advise family to obtain washable doormats for entrances to the dwelling.

_____ Counsel family to keep child away from bare soil areas thought to be at risk.
(specify): _____

Occupational/Hobby Lead Hazards

Use the information in this section to determine if the child's source of lead exposure could be related to the parents', older siblings' or other adults' work environment. Occupations that may cause lead exposure include the following:

- Φ Paint removal (including sandblasting, scraping, abrasive blasting, sanding, or using a heat gun or torch).
- Φ Chemical strippers.

Remodeling, repairing, or renovating dwellings or buildings, or tearing down buildings or metal structures (demolition

- Φ Plumbing.
- Φ Repairing radiators.
- Φ Melting metal for reuse (smelting).
- Φ Welding, burning, cutting, or torch work.
- Φ Pouring molten metal (foundries).
- Φ Auto body repair work.
- Φ Working at a firing range.
- Φ Making batteries.
- Φ Making paint or pigments.
- Φ Painting.
- Φ Salvaging metal or batteries.
- Φ Making or splicing cable or wire.
- Φ Creating explosives or ammunition.
- Φ Making or repairing jewelry.
- Φ Making pottery.
- Φ Building, repairing, or painting ships.
- Φ Working in a chemical plant, a glass factory, an oil refinery, or any other work involving lead.

1. Where do adult family members work? (include mother, father, older siblings, other adult household members)

Name	Place of employment	Occupation or job title	Probable lead exposure (yes/no)

2. Are work clothes separated from other laundry?

3. Has anyone in the household removed paint or varnish while in the dwelling? (includes paint removal from woodwork, furniture, cars, bicycles, boats)

4. Has anyone in the household soldered electric parts while at home?

5. Does anyone in the household apply glaze to ceramic or pottery objects?

6. Does anyone in the household work with stained glass?

Does anyone in the household use artist's paints to paint pictures or jewelry

7. Does anyone in the household reload bullets, target shoot, or hunt?

8. Does anyone in the household melt lead to make bullets or fishing sinkers?
9. Does anyone in the household work in autobody repair at home or in the yard?
10. Is there evidence of take-home work exposures or hobby exposures in the dwelling?

Assessment: (check)

_____ Probable occupational-related lead exposure.

_____ Probable hobby-related lead exposure.

Actions: (check)

_____ Counsel family (specify):

_____ Refer to (specify): _____

Child Behavior Risk Factors

1. Does child suck his/her fingers? yes no (circle)
2. Does child put painted objects into the mouth? yes no (circle)

   If yes, specify: _____
3. Does child chew on painted surfaces, such as old painted cribs, window sills, furniture edges, railings, door molding, or broom handles?

   If yes, specify: _____
4. Does child chew on putty around windows?
5. Does child put soft metal objects in the mouth? These might include lead and pewter toys and toy soldiers, jewelry, gunshot, bullets, beads, fishing sinkers, or any items containing solder (electronics).
6. Does child chew or eat paint chips or pick at painted surfaces? Is the paint intact in the child's play areas?
7. Does the child put foreign, printed material (newspapers, magazines) in the mouth?
8. Does the child put matches in the mouth? (Some matches contain lead acetate.)
9. Does the child play with cosmetics, hair preparations, or talcum powder or put them into the mouth? Are any of these foreign made?
10. Does the child have a favorite cup? A favorite eating utensil? If yes, are they handmade or ceramic?
11. Does the child have a dog, cat, or other pet that could track in contaminated soil or dust from the outside? Where does the pet sleep?
12. Where does the child obtain drinking water?
13. If child is present, note extent of hand-to-mouth behavior observed.

Assessment: (check)

_____ Child is at risk due to hand-to-mouth behavior.

_____ Child is at risk for mouthing probable lead-containing substance (specify):

_____

_____ Child is at risk for other (specify): _____

Actions:

_____ Counsel family to limit access or use of (specify):

_____ Other (specify): _____

Other Household Risk Factors

1. Are imported cosmetics such as Kohl, Surma, or Ceruse used in the home?
2. Does the family ever use any home remedies or herbal treatments? (What type?)
3. Are any liquids stored in metal, pewter, or crystal containers?
4. What containers are used to prepare, serve, and store the child's food? Are any of them metal, soldered, or glazed? Does the family cook with a ceramic bean pot?
5. Does the family use imported canned items regularly?
6. Does the child play in, live in, or have access to any areas where the following materials are kept: shellacs, lacquers, driers, coloring pigments, epoxy resins, pipe sealants, putty, dyes, industrial crayons or markers, gasoline, paints, pesticides, fungicides, gasoline, gear oil, detergents, old batteries, battery casings, fishing sinkers, lead pellets, solder, or drapery weights?
7. Does the child take baths in an old bathtub with deteriorated or nonexistent glazing?

Assessment: (check)

_____ Increased risk of lead exposure due to _____

Actions: (check)

_____ Counsel family to limit access or use (specify): _____

_____ Other (specify): _____

Assessment for Likely Success of Hazard Control Measures

1. What cleaning equipment does the family have in the dwelling? (circle)

   broom, mop and bucket, vacuum (does it work?), sponges and rags
2. How often does the family:

   Sweep the floors?

   Wet mop the floors?

   Vacuum the floors?

   Wash the window sills?

   Wash the window troughs?
3. Are floor coverings smooth and cleanable?
4. What type of floor coverings are found in the dwelling? (circle all that apply)

   vinyl/linoleum carpeting wood other (specify): _____
5. Cleanliness of dwelling (circle one):

   Code: 1 = appears clean, 2 = some evidence of housecleaning, 3 = no evidence of housecleaning,

4 = _____, 5 = _____, 6 = _____, 7 = _____

[Pick the best category based on overall observations of cleanliness in the dwelling.]

1. Appears clean.
2. Some evidence of housecleaning.
3. No evidence of housecleaning.

No visible dust on most surfaces.

Evidence of recent vacuuming of carpet.

No matted or soiled carpeting.

No debris or food particles scattered about.

Few visible cobwebs.

Clean kitchen floor.

Clean doorjambs.

Slight dust buildup in corners.

Slight dust buildup on furniture.

Slightly matted and/or soiled carpeting.

Some debris or food particles scattered about.

Some visible cobwebs.

Slightly soiled kitchen floor.

Slightly soiled doorjambs.

Heavy dust buildup in corners.

Heavy dust buildup on furniture.

Matted and/or soiled carpeting.

Debris or food particles scattered about.

Visible cobwebs.

Heavily soiled kitchen floor.

Heavily soiled doorjambs.

Assessment: (check)

_____ Cleaning equipment inadequate.

_____ Cleaning routine inadequate.

_____ Floor coverings inadequate to maintain clean environment.

Actions: (check)

_____ Counsel family to limit access or use (specify): _____

_____ Provide cleaning equipment.

_____ Instruct family on special cleaning methods.

_____ Flooring treatments needed.

_____ Other (specify): _____

Appendix D
Virginia Department of Health **Health District**_____
Field Sampling Form for Deteriorated Paint (One form for each housing unit, common area, or exterior)

Name of risk assessor _____

Name of property owner _____

Property address _____ Apt. no._____

Dwelling selection protocol _____All dwellings _____Targeted _____Worst case _____Random

Disclosure of information on Lead Based Paint and Lead Based Paint Hazards:
Housing built before 1978 may contain lead based paint. Lead from paint, paint chips, and dust can pose health hazards if not taken care of properly. Lead exposure is especially harmful to young children and pregnant women. Federal law requires the seller of any interest in residential property to provide the buyer with any information on lead based paint hazards from risk assessments or inspections in the seller's possession and notify the buyer of any known lead based paint hazards. Federal law also requires landlords to disclose the presence of known lead based paint hazards in the houses and apartments built before 1978.. Also tenants/purchasers must receive a Federally approved pamphlet on lead poisoning prevention the pamphlet entitled ***Protect Your Family from Lead in Your Home.***

Questions to be addressed to the occupant of the dwelling:

Was the prescence of lead based paint and the potential/existing lead based paint hazards disclosed to you during the real estate transaction (purchase or rental agreement)?

Were you given the pamphlet entitled ***Protect Your Family from Lead in Your Home****?*

Target dwelling criteria (check all that apply)

_____ Code violations

_____ Judged to be in poor condition

_____ Presence of two or more children between ages of 6 months and 6 years _____ _____Serves as day-care facility

_____ Recently prepared for reoccupancy

_____ Random sampling

Sample number	Room	Building component	Lead (mg/cm2)

Sample all layers of paint, not just deteriorated paint layers.

Total number of samples on this page_____

Page _____ of _____

Date of sample collection____/____/____ Date shipped to lab____/____/____

Shipped by _____

(signature)

Received by _____

(signature)

Date results reported ____/____/____

Analyzed by_____

Approved by_____

Field Sampling Form for Deteriorated Paint (Continuation Page)

Sample number	Room	Building component	Lead (mg/cm2

Appendix E
Virginia Department of Health **Health District**_____
Field Sampling Form for Dust

(Single-Surface Sampling)

Name of risk assessor _____

Name of property owner _____

Property address _____ Apt. no._____

Disclosure of information on Lead Based Paint and Lead Based Paint Hazards:

Housing built before 1978 may contain lead based paint. Lead from paint, paint chips, and dust can pose health hazards if not taken care of properly. Lead exposure is especially harmful to young children and pregnant women. Federal law requires the seller of any interest in residential property to provide the buyer with any information on lead based paint hazards from risk assessments or inspections in the seller's possession and notify the buyer of any known lead based paint hazards. Federal law also requires landlords to disclose the presence of known lead based paint hazards in the houses and apartments built before 1978. Also tenants/purchasers must receive a Federally approved pamphlet on lead poisoning prevention the pamphlet entitled ***Protect Your Family from Lead in Your Home.***

Questions to be addressed to the occupant of the dwelling:

Was the prescence of lead based paint and the potential/existing lead based paint hazards disclosed to you during the real estate transaction (purchase or rental agreement)?

Were you given the pamphlet entitled ***Protect Your Family from Lead in Your Home****?*

Target dwelling criteria (check all that apply)

_____ Code Violations
_____ Judged to be in poor condition
_____ Presence of two or more children between ages of 6 months and 6 years
_____ Serves as day-care facility
_____ Recently prepared for reoccupancy

Field sampling form for Dust Page 2

Sample number	Room (record name of room used by the owner or resident)	Surface type (circle the type)	Is surface smooth and cleanable?	Dimensions of sample area (inches x inches)	Area (ft2)	Result of lab analysis (µg/ft2)
		Floor		____ x ____		
		Interior window sill		____ x ____		
		Floor		____ x ____		
		Interior window sill		____ x ____		
		Floor		____ x ____		
		Interior window sill		____ x ____		
		Floor		____ x ____		
		Interior window sill		____ x ____		
		Floor		____ x ____		
		Floor		____ x ____		
		Interior window sill		____ x ____		
		Floor		____ x ____		
		Interior window sill		____ x ____		
		Floor		____ x ____		
		Interior window sill		____ x ____		
		Floor		____ x ____		
		Interior window sill		____ x ____		
		Floor		____ x ____		

(Field sampling form for Dust Page 3)

Sample number	**Room (record name of room used by the owner or resident)**	**Surface type (circle the type)**	**Is surface smooth and cleanable?**	**Dimensions of sample area (inches x inches)**	**Area (ft2)**	**Result of lab analysis (µg/ft2)**
		Floor		____ x ____		
		Interior window sill		____ x ____		
		Floor		____ x ____		
		Interior window sill		____ x ____		
		Floor		____ x ____		
		Interior window sill		____ x ____		
		Floor		____ x ____		
		Interior window sill		____ x ____		
		Floor		____ x ____		
		Floor		____ x ____		
		Interior window sill		____ x ____		
		Floor		____ x ____		
		Interior window sill		____ x ____		
		Floor		____ x ____		
		Interior window sill		____ x ____		
		Floor		____ x ____		
		Interior window sill		____ x ____		
		Floor		____ x ____		

Appendix F

Virginia Department of Health
Health District_____
Field Sampling Form for Soil

(Composite Sampling Only)

Name of risk assessor _____

Name of property owner _____

Property address _____

Sample number	Location	Lab result (µg/g) = ppm)
	Play area 1 (describe)	
	Play area 2 (describe)	
	Play area 3(describe)	
	Remaining bare areas of yard which are not child play areas (describe)	

Collect only the top 1/2 inch of soil.

Total number of samples on this page_____

Page _____ of _____

Date of sample collection____/____/____ Date shipped to lab____/____/____

Shipped by _____
(signature)

Received by _____
(signature)

Appendix G

Virginia Department of Health **Health District_____**

Field Sampling Form for Water

Name of risk assessor _____

Name of property owner _____

Property address _____ Apt. no._____

Date_____

Time/date faucet labeled “off”_____

Samples Required	Volume	Sample Time	Results (ug/kg = ppb)
First Draw Sample #_____	250 cc		
Second Draw Sample #_____	750 cc		
Third Draw Sample #_____	250 cc		
Fourth Draw Sample#_____	1 Liter		

Appendix H

Virginia Department of Health **Health District_____**

Field Sampling Form for Other Media

Name of risk assessor _____

Name of property owner _____

Property address _____

Apt. no._____

Date_____

Sample Type/Number	Sampling Technique (describe)	Results	Comments

Appendix I

EXAMPLE OF AN ENVIRONMENTAL INTERVENTION BLOOD LEAD LEVEL EVALUATION REPORT

Date of Evaluation: June 10, 2004

Performed at:
1234 Popular Road
Anywhere, VA 23804
File Case # 99-8018

Construction Year & Type: 1916; This two story unit is the left side of a duplex.

Owner of Property:
Martha D. Owner
123 Different Street
Anywhere, VA 23804
(804) 555-1234

EPA NLLAP Accredited Laboratory:

Schneider Laboratories
2512 West Cary Street
Richmond, VA 23220-5117
1-800-785-5227

Instrument Type:
RMD (Radiation Monitoring Devices)
Model LPA-1
XRF TYPE ANALYZER
Serial Number 1233

Performed by:
David B. Joe, E.H.S.
Lead Inspector / Risk Assessor VA# 0000 000000
Any Health District
123 Healthy Street
Anywhere, VA 23804
(804) 555-4321, ext. 123

SIGNED_____ DATE: _____

TABLE OF CONTENTS SECTION

Section 1

SUMMARY OF EVALUATION

An Environmental Intervention Blood Lead Level Evaluation was performed at the 1234 Popular Road, Anywhere, VA on June 10, 2004 by David B. Joe, licensed Lead Inspector and Risk Assessor. The EIBLL Evaluation was performed following the U S Environmental Protection Agency 403 Rule, *Lead, Identification of Dangerous Levels of Lead*, the U. S. Department of Housing and Urban Development (HUD) *Guidelines for the Evaluation and Control of Lead-Based Paint in Housing*, the Virginia Department of Professional and Occupational Regulation *Virginia Lead-Based Paint Activities Regulations*, and the U S EPA Model Curriculum for Inspections/Risk Assessments. These documents serve as the federal and state standard for lead-based paint activities. This investigation was the result of notification to the Health Department, revealing that the 3 year old child residing herein has a confirmed blood lead level of 35 ug/dl. **Lead hazards were found that could continue to adversely affect the child's health, and the health of any child under six that may reside at this address.**

A RMD LPA-1 XRF lead analyzer was used to test all deteriorated surfaces both interior and exterior to the dwelling to identify lead-based paint. In addition, any deteriorated areas of the fence around the play area and the play equipment were also tested. . Teeth marks were observed on the child's bed; therefore the bed varnish/stain was tested. (Although the 403 Rule only includes testing of components which are part of the structure, due to the presence of the lead-poisoned child, all potential sources must be considered. The bed was older, of indeterminate age.)

According to HUD Guidelines, any surface equal to or greater than 1.0 mg/cm^2 is considered to be lead based paint, and if the surfaces is also deteriorated, component is identified as a lead paint hazard. The highest level that the RMD LPA-1 XRF lead analyzer will read is 9.9 mg/cm^2. Precise locations of all components and surfaces tested are found in section 3 of this report.

Dust wipe samples were collected in accordance with the regulations/guidance listed above, and following the Standard Operating Procedure contained in the Virginia Department of Health's EIBLI manual. As required by the 403 Rule, dust wipes of the floor and window sill in each room occupied by the child were collected. Due to the confirmed presence of a lead-poisoned child, additional samples were taken on the outside porch floors, both front and back.

Soil samples were collected from the bare play areas around the tree in the NE corner of the yard, and from the area under and around the play equipment.

Water samples were collected in accordance with the EPA Model Curriculum and the Standard Operating Procedure included in the VDH EIBLI manual.

When investigating properties for potential lead hazard, sources of exposure other than the residence are investigated. According to the tenant, no one in the household uses or practices any traditional remedies or hobbies that would involve exposure to lead, works in a lead-related industry, or uses foreign or glazed pottery or crystal. No painted wooden or metal toys, fishing equipment, or collectibles were found. Some imported mini-blinds have been found to contain lead. Therefore, all mini-blinds present were tested using the XRF. From the questionnaire, the

only other potential source of lead to the child was the mother's decorative key ring, which is frequently handled and mouthed by the child. The key ring was sent to the laboratory, where the object was scrapped and the dust was analyzed.

A visual assessment of the unit was performed. While the unit would appear to be in overall good condition, according to the Building Condition Form, the building is in Poor Condition. The EIBLL investigation identified lead hazards in the following locations:

Paint Lead Hazards

1. Deteriorated lead based paint on the exterior side of the windows.
2. Deteriorated lead based paint on some of the interior window trim
3. Deteriorated lead based paint on all of the interior doors
4. Deteriorated lead based paint on exterior doors
5. Deteriorated lead based paint on interior hand railing
6. Deteriorated lead based paint on stairway treads
7. Deteriorated lead based paint on bathroom cabinets (upstairs bathroom only, not a friction/impact problems, only front & sides)

Dust Lead Hazards

8. Leaded dust on the floor of the child's bedroom
9. Leaded dust on stair treads.

Soil Lead Hazards

10. Bare soil under and around play equipment

Other Sources of Lead

11. Mother's lead containing key ring with bird ornament

The exterior of the duplex appears to be the original wooden siding, which has been scrapped and maintained throughout the years. The windows and doors, including trim also appear to be original to the duplex. The interior floors are a combination of hardwood and linoleum (kitchen and bathroom). Wall and ceilings are plaster over lathing and were repaired and repainted more than five years previously.

The interior of the unit consists of a living room, half bathroom, dining room, hallway and kitchen downstairs, and three bedrooms, hallway and bathroom upstairs. There are covered, but not enclosed, front and back porches

According to Virginia Lead-Based Paint Activities Regulations, our department shall maintain this report for no less than three years. This report is intended to inform the owner of the results of the investigation and to begin the process of lead based paint hazard **reduction or removal from the home. It is the owner's responsibility to make the final choice on a course of action. Section 5 of this report lists recommendations for this address.**

Effective October 1, 2003, it shall be unlawful for an owner to hire anyone to perform lead-based paint activities within the Commonwealth without that person obtaining a license from the Virginia Department of Professional and Occupational Regulation located in Richmond. Additionally, because the purpose of an EIBLL investigation is to identify and

control lead-based paint hazards, an accredited, licensed abatement contractor must be used.

*** The HUD guidelines revised chapter 7 (1997) requests that disclosure information be provided in lead based paint and risk assessment reports. This disclosure advice is intended for protection to the homeowner as well as future owners and or tenants:

The Federal Residential Lead-Based Paint Hazard Reduction Act of 1992, 42 U.S.C. 4852d, requires sellers and landlords of most residential housing built before 1978 to disclose all available and reports concerning lead-based paint and/or lead-based paint hazards, ***including the test results contained in this notice****, to purchasers and tenants at the time of sale or lease or upon lease renewal. This disclosure must occur even if the hazard reduction or abatement has been completed. Failure to disclose these test results is a violation of the U.S. Department of Housing and Urban Development and the U.S. Environmental Protection Agency regulations at 24 CFR Part 35 and 40 CFR Part 745 and can result in a fine of up to $11,000 per violation. To find out more information about your obligations under federal lead-based paint requirements, call 1-800-424-LEAD.*

Once you have had the time to review this report, please contact me to discuss which option that you have selected.

Section 2

Diagram of the Unit

(Insert diagram of the residence)

Section 3

Deteriorated Paint Results (XRF and/or Paint Chip Data)

XRF DATA

XRF testing (X-ray fluorescence):

The RMD LPA-1 uses a Cobalt^{57} radioactive source and an advanced, solid state radiation detector to generate an X-ray fluorescence spectrum of a painted surface. The microprocessor records the information and stores the data for a later download into a report generating software package. Attached is the detailed XRF report data.

The Cobalt source has a half-life of 9 months. As per the instrument's Performance Characteristics Sheet (PCS), calibration checks are taken in Standard mode (Std). The length of the calibration reading in standard mode must be adjusted to account for source decay. The calibration readings of this equipment are taken before, after, and if more than 4 hours has passed during the inspection. A yellow 1.9mg/cm^2 NIST traceable standard paint film is used to calibrate the equipment's accuracy. The LPA-1 also self calibrates every 5 minutes as an internal control mechanism. RMD performed a radiation leak test on (DATE) and the radioactivity level was found to be less than .005uCi and meets National Regulatory Commission (NRC) requirements.

The Quick mode (QM) setting is used for the actual testing. According to the manufacture this mode allows the user the highest range of precision. There is no substrate correction in the QM mode. As per the PCS, inconclusive ranges for metal painted surfaces are ranges of 0.9 to 1.3 mg/cm^2. For plaster painted surfaces the inconclusive range is 0.9 to 1.0 mg/cm^2. The Mode column at the end of the detailed XRF report shows which mode was used during operation.

Surface conditions are determined using the EPA 403 rule.

DETAILED REPORT OF ENVIRONMENTAL BLOOD LEAD LEVEL EVALUATION FOR: 1234 Popular Road

Inspection Date:	06/10/2004	1234 Popular Road	
Report Date:	08/06/2004		
Report No.	S#01233 - 06/10/99 09:35		
Total Readings:	126		
Job Started:	06/10/2004 6:35		
Job Finished:	06/10/2004 3:45		

Calibration Readings			
001		1.9	Std
002		1.9	Std
003		2.0	Std
124		1.7	Std
125		1.6	Std
126		1.8	Std

---- End of Readings ----

Field Sampling Form for Deteriorated Paint

Name of risk assessor
David B. Joe, E.H.S.
Lead Inspector / Risk Assessor VA# 0000 000000
Any Health District
123 Healthy Street
Anywhere, VA 23804
(804) 555-4321, ext. 123

Name of property owner
Martha D. Owner
123 Different Street
Anywhere, VA 23804
(804) 555-1234

Property address
1234 Popular Road
Anywhere, VA 23804
File Case # 99-8018

Unit # 1

Dwelling selection protocol _**N/A**_All dwellings _____Targeted _____Worst case _____Random

Target dwelling criteria (check all that apply) **N/A**

_____ Code violations _____ Judged to be in poor condition _____ Presence of two or more children between ages of 6 months and 6 years _____ Serves as day-care facility _____ Recently prepared for reoccupancy _____ Random sampling

Disclosure of information on Lead Based Paint and Lead Based Paint Hazards:

Housing built before 1978 may contain lead based paint. Lead from paint, paint chips, and dust can pose health hazards if not taken care of properly. Lead exposure is especially harmful to young children and pregnant women. Federal law requires the seller of any interest in residential property to provide the buyer with any information on lead based paint hazards from risk assessments or inspections in the seller's possession and notify the buyer of any known lead based paint hazards. Federal law also requires landlords to disclose the presence of known lead based paint hazards in the houses and apartments built before 1978.. Also tenants/purchasers must receive a Federally approved pamphlet on lead poisoning prevention the pamphlet entitled ***Protect Your Family from Lead in Your Home.***

Questions to be addressed to the occupant of the dwelling:

Was the prescence of lead based paint and the potential/existing lead based paint hazards disclosed to you during the real estate transaction (purchase or rental agreement)? Y

Were you given the pamphlet entitled ***Protect Your Family from Lead in Your Home****?Y*

XRF READINGS (Deteriorated Surfaces only)

Sample number	Room	Building component /Wall	Lead (mg/cm2)
1-06102004vhh	1 /dwnstrs hallway	Front Door (to exterior of unit)	2.3
2-06102004vhh	1 /dwnstrs hallway	Front Door trim	0.00
3-06102004vhh	1 /dwnstrs hallway	Window trim	1.9
4-06102004vhh	10 /child's (3 yr old) bedroom	Window trim	2.1
5-06102004vhh	1 /dwnstrs hallway/	Door to bathroom	2.5
6-06102004vhh	1 /dwnstrs hallway	Door to kitchen	2.3
7-06102004vhh	1 /dwnstrs hallway	Door to living room	2.0
8-06102004vhh	1 /dwnstrs hallway	Door to dining room	2.4
9-06102004vhh	2 /Living room	Door to hallway	1.8
10-06102004vhh	3 /Kitchen	Door to hallway	2.1
11-06102004vhh	4 /Dining Room	Door to hallway	2.0
12-06102004vhh	5 /1/2 Bath	Door to hallway	2.5
13-06102004vhh	6 /Stairs	Hand railing	4.5
14-06102004vhh	6 /Stairs	Tread	1.1
15-06102004vhh	7 /Upstrs hallway	Door to bathroom	1.9
16-06102004vhh	7 /Upstrs hallway	Door to bedroom 1 (parents)	2.1
17-06102004vhh	7 /Upstrs hallway	Door to bedroom 2 (3 yr. old child's)	2.2
18-06102004vhh	7 /Upstrs hallway	Door to bedroom 3 (7 & 9 yr. old children's room)	2.0
19-06102004vhh	8 /Bedroom 1	Door to hallway	1.8
20-06102004vhh	9 /Bedroom 2	Door to hallway	1.8
21-06102004vhh	10 /Bedroom 3	Door to hallway	2.0
22-06102004vhh	11 /Bathroom	Door to hallway	2.1
23-06102004vhh	11 /Bathroom	Metal cabinets	4.8
EXTERIOR RESULTS			
24-06102004vhh	12 /Exterior	Window sash	3.3

25-06102004vhh	12 /Exterior	Front door	3.6
26-06102004vhh	12 /Exterior	Back door	1.6

Section 4

Dust Wipe Results

Form 5.4 Field Sampling Form for Dust

Name of risk assessor
David B. Joe, E.H.S.
Lead Inspector / Risk Assessor VA# 0000 000000
Any Health District
123 Healthy Street
Anywhere, VA 23804
(804) 555-4321, ext. 123

Name of property owner
Martha D. Owner
123 Different Street
Anywhere, VA 23804
(804) 555-1234

Property address
1234 Popular Road
Anywhere, VA 23804
File Case # 99-8018

Disclosure of information on Lead Based Paint and Lead Based Paint Hazards:

Housing built before 1978 may contain lead based paint. Lead from paint, paint chips, and dust can pose health hazards if not taken care of properly. Lead exposure is especially harmful to young children and pregnant women. Federal law requires the seller of any interest in residential property to provide the buyer with any information on lead based paint hazards from risk assessments or inspections in the seller's possession and notify the buyer of any known lead based paint hazards. Federal law also requires landlords to disclose the presence of known lead based paint hazards in the houses and apartments built before 1978.. Also tenants/purchasers must receive a Federally approved pamphlet on lead poisoning prevention the pamphlet entitled ***Protect Your Family from Lead in Your Home.***

Questions to be addressed to the occupant of the dwelling:

Was the presence of lead based paint and the potential/existing lead based paint hazards disclosed to you during the real estate transaction (purchase or rental agreement)? Y

Were you given the pamphlet entitled ***Protect Your Family from Lead in Your Home****? Y*

(Single-Surface Sampling)

Sample number	Room (record name of room used by the owner or resident)	Surface type (circle the type)	Is surface smooth and cleanable?	Dimensions of sample area (inches x inches)	Area (ft2)	Result of lab analysis (μg/ft2)
27-06102004vhh	1 /Dwnstrs hallway	Floor	yes	12” x 12”	1	28
28-06102004vhh	1 /Dwnstrs hallway	Interior window sill (window does not open)	yes	3” x 12”	0.4	31
29-06102004vhh	2 /Living room	Floor	yes	12” x 12”	1	23
30-06102004vhh	2 /Living room	Interior window sill	yes	4” x 24”	0.6	226
31-06102004vhh	3 /Kitchen	Floor	yes	12” x 12”	1	31
32-06102004vhh	3 /Kitchen	Interior window sill	yes	4” x 24”	0.6	221
33-06102004vhh	4 /Dining room	Floor	yes	12” x 12”	1	36
34-06102004vhh	4 /Dining room	Interior window sill	yes	4” x 24”	0.6	136
35-06102004vhh	5 /Dwnstrs bathroom	Floor (no window in bathroom)	yes	12” x 12”	1	22
36-06102004vhh	6 /Stairs	Floor (treads)	yes	4” x 24”	0.6	**59**
37-06102004vhh	7 /Upstrs hallway	Floor (no window in hall)	yes	12” x 12”	1	33
38-06102004vhh	8 / Bedroom 1	Floor	yes	12” x 12”	1	BDL
39-06102004vhh	8 / Bedroom 1	Interior window sill	yes	4” x 24”	0.6	232
40-06102004vhh	9 /Bedroom 2	Floor	yes	12” x 12”	1	**69**
41-06102004vhh	9 /Bedroom 2	Interior window sill	yes	4” x 24”	0.6	213
42-06102004vhh	10 /Bedroom 3	Floor	yes	12” x 12”	1	38
43-06102004vhh	10 /Bedroom 3	Interior window sill	yes	4” x 24”	0.6	217
44-06102004vhh	11 /Bathroom	Floor	yes	12” x 12”	1	BDL

(Continued)

Sample number	Room (record name of room used by the owner or resident)	Surface type (circle the type)	Is surface smooth and cleanable?	Dimensions of sample area (inches x inches)	Area (ft2)	Result of lab analysis (μg/ft2)
45-06102004vhh	11 /Bathroom	Interior window sill	Yes	4” x 12”	0.3	BDL
46-06102004vhh	13 /Front porch	Floor	Yes	12” x 12”	1	39
47-06102004vhh	14 /Back Porch	Floor	yes	12” x 12”	1	37

Laboratory Sample Sheet: Include Actual Result Forms From Lab

Section 5

SOIL SAMPLE RESULTS

Soil sampling:

Two composite soil samples of bare soil in child play areas were taken to determine the lead concentration in the soil: one under and around the play equipment and the other under the tree in the NE corner of the yard. Laboratory results of play equipment area sample exceeded levels established by EPA indicating the presence of a lead hazard and therefore requiring a hazard control option. (Soil sampling and guidance found in SOPs for soil sampling)

Field Sampling Form for Soil

Name of risk assessor
David B. Joe, E.H.S.
Lead Inspector / Risk Assessor VA# 0000 000000
Any Health District
123 Healthy Street
Anywhere, VA 23804
(804) 555-4321, ext. 123

Name of property owner
Martha D. Owner
123 Different Street
Anywhere, VA 23804
(804) 555-1234

Property address
1234 Popular Road
Anywhere, VA 23804
File Case # 99-8018

(Composite Sampling Only)

Sample number	Location	Lab result (µg/g) = ppm)
48-06102004vhh	Play area 1 (describe) This area is under and around the play equipment (swing set, etc.) located very close to the house on the NE side of the back yard. The area is approximately 14' x 5' in size.	5,022

49-06102004vhh	Play area 2 (describe) This is the area under a large tree with low branches which all of the children use as a climbing/play area.	301
THESE WERE THE ONLY TWO BARE AREAS OF THE YARD		

Collect only the top 1/2 inch of soil.

Total number of samples on this page___2_____

Page __1_____ of __1_____

Laboratory Sample Sheet: Include Actual Result Forms From Lab

Section 6

Water Sample Results

Field Sampling Form for Water

Name of risk assessor
David B. Joe, E.H.S.
Lead Inspector / Risk Assessor VA# 0000 000000
Any Health District
123 Healthy Street
Anywhere, VA 23804
(804) 555-4321, ext. 123

Name of property owner
Martha D. Owner
123 Different Street
Anywhere, VA 23804
(804) 555-1234

Property address
1234 Popular Road
Anywhere, VA 23804
File Case # 99-8018

Date_06/10/2004_

Time/date faucet labeled “off”_06/09/2004 11:30 PM

Samples Required	Volume	Sample Time	Results (ug/kg = ppb)
First Draw Sample # DW -1-06102004vhh	250 cc	06:45	11 ppb
Second Draw Sample # DW -2-06102004vhh	750 cc	06:48	9 ppb
Third Draw Sample # DW -3-06102004vhh	250 cc	06:55	4 ppb

Fourth Draw Sample# DW -4-06102004vhh	1 Liter	07:08	BDL

Laboratory Sample Sheet: Include Actual Result Forms From Lab

Section 7

Other Media

Field Sampling Form for Other Media

Name of risk assessor
David B. Joe, E.H.S.
Lead Inspector / Risk Assessor VA# 0000 000000
Any Health District
123 Healthy Street
Anywhere, VA 23804
(804) 555-4321, ext. 123

Name of property owner
Martha D. Owner
123 Different Street
Anywhere, VA 23804
(804) 555-1234

Property address
1234 Popular Road
Anywhere, VA 23804
File Case # 99-8018

Sample Type/Number	Sampling Technique (describe)	Results	Comments
50-A-06102004vhh Key chain with ornamental fish sent to lab to scrape	Scrapped part of ring	22 % lead (A)	Both of these items were frequently mouthed by the child. The EPA & HUD list deteriorated paint as a hazard at 0.5 %. It is reasonable to assume this item contributed to the poisoning of the child.
50-B-06102004vhh Key chain with ornamental fish sent to lab to scrape (same sample # because only one item is sent, although results will be split into A & B)	Scrapped part of fish	18 % lead (B)	

Laboratory Sample Sheet: Include Actual Result Forms From Lab

Section 8

Hazard Control Options: Abatement

Abatement is a measure or measures designed to permanently eliminate lead-based paint hazards. These measures include the removal of lead-based paint, and lead contaminated dust, the permanent enclosure or encapsulation of lead-based paint, the replacement of lead based-painted surfaces and fixtures and the removal or permanent covering of lead contaminated soil. Abatement also includes all preparation, cleanup, disposal, and post-abatement clearance testing activities associated with such measures.

Abatement measures include:

- building component replacement;
- enclosure systems;
- paint removal (on-site or off-site);
- encapsulation (with patch test and a 20 year warranty);
- permanent soil covering (paving); and
- soil removal and replacement.

Building component replacement consist of removal of doors, windows, trim and other building items that are coated with lead-based paint and replacement with new lead-free components. This measure is appropriate when the component is mostly deteriorated since interim control measures are unlikely to be effective on unsound components (rotted windows sashes, door, etc.). The advantages of building component replacement are that it creates a permanent solution by removing all lead-based paint; it minimizes dust contamination to the property; and it minimizes worker and resident exposure. The disadvantages are that component replacement can be relatively expensive; in some historic preservation projects component replacement may not be permitted, and it requires personnel with carpentry skills to successfully complete the work. Also, when trim is removed, the openings can release large amounts of lead dust.

Using ***Enclosure Systems*** consists of mechanically attaching a rigid, durable barrier to building components, with all edges and seams sealed with caulk or other sealant. Enclosures are intended to prevent access and exposure to lead-based painted surfaces and provide a "dust-tight" system to trap any lead-contaminated dust. Some appropriate materials for enclosure are:

Interior finish	-	drywall, paneling, wainscot
Exterior finish	-	aluminum, vinyl siding
Exterior trim	-	aluminum or vinyl coil stick
Steps	-	vinyl or rubber tread and riser coverings
Floors	-	underlayment and vinyl or other sheet finish goods

The advantages of enclosure is it allows use of standard, locally available construction materials; it is highly reliable and may be more durable than encapsulation; and it generates minimal levels of lead dust. There are several disadvantages of enclosure. It does not permanently remove lead-based paint

(it only makes the dwelling free of hazards). The systems are vulnerable to water and physical damage. Future renovations can result in exposure to surfaces and create hazards (note: it is important to label surfaces that have lead-based paint before they are enclosed.). It cannot be used on unsound structures. Enclosures should be monitored annually by the owner. And aluminum or vinyl exterior siding can conceal rotting wood.

On-Site Paint Removal consists of an on-site separation of paint from the substrate using a variety of methods. Appropriate methods include heat guns at temperatures not greater than 1,100 degrees F, chemical removal, and mechanical (HEPA sanding, wet scraping, HEPA abrasive blasting, HEPA vacuum needle blasting). The advantage of on-site paint removal is it can be less costly than replacing or enclosing building components. The disadvantage of on-site paint removal is a significant amount of dust may be released; caustic chemicals such as Peel-Away may be used; chemical stripping can leave lead residues; certain mechanical methods are not effective on certain substrates; and specialized equipment is needed.

Off-Site Paint Removal consists or removing paint through chemical or other means at a facility not on the abatement site (chemical stripping/dipping operations). The advantage of using off-site paint removal is that it has a low reevaluation failure rate; it is appropriate for historic preservation; and minimal ongoing monitoring is needed. The disadvantages of using off-site paint removal are that it can be expensive; it may deteriorate glues or other elements of components which may cause components to disintegrate; and it does not remove lead from the wood, which may release lead dust if it is disturbed again.

Encapsulation is the process of rendering lead-based paint inaccessible by providing a barrier between the paint and the environment. The barrier is formed using a liquid-applied coating (with or without reinforcement materials) and/or an adhesively bonded covering material. Generally, encapsulants are attached to the surface by bonding the product directly to the surface or by using an adhesive. HUD Guidelines require that the manufacture provide a 20-year warranty on the effectiveness of the product if the product is considered a "permanent abatement" technique. The HUD Guidelines also require that the property owner must conduct visual monitoring at one and six months after application to be sure the encapsulant is still intact. The advantages of encapsulation are that lead dust is not generated (if surface preparation is minimal); it may be less costly compared to other abatement methods; and a variety of encapsulation products are available to meet different needs. The disadvantages of encapsulation are that it is inappropriate for use on friction, impact, chewable, or severely deteriorated surfaces; information on long term durability is limited; durability depends on the condition of previous paint layers; it is susceptible to water damage; and it may not be applied in extremely hot or cold weather conditions.

Permanent Soil Covering consists of permanently covering bare, lead contaminated soil with concrete, asphalt, or other permanent materials. The EPA 403 Rule requires either permanent soil covering or removal and replacement once a soil lead hazard (play areas $\geq$ 400 ppm, other bare areas averaging $\geq$ 1,200 ppm) has been identified. The advantage of permanent covering is that it is a permanent solution, provided that the source of lead in the soil has also been controlled; and it is less costly than removal and replacement of soil. The disadvantage of permanent covering is that it is not appropriate for certain land uses (backyards, sandboxes), and may be subject to regulations regarding storm water control.

Removal and Replacement of Bare Soil involves removing the top 2 – 6 inches of lead contaminated soil; and putting new soil in its place. As stated above, the EPA 403 Rule requires either permanent soil covering or removal and replacement once a soil lead hazard (play areas $\geq$ 400 ppm, other bare areas averaging $\geq$ 1,200 ppm) has been identified. The advantage of removal and replacement is that it permanently removes the source of lead by taking it off-site.

Section 9

Hazard Control Options: Interim Controls

Because the cost of abatement can be prohibitively expensive, Interim Controls are another option to consider. Interim Controls are intended to make dwellings "lead safe" by temporarily controlling lead based paint hazards, as opposed to abatement, which is intended to permanently control lead hazards. Interim control measures are fully effective only if they are carefully monitored, maintained, and periodically reevaluated by a licensed risk assessor. If interim controls are properly maintained, they can be effective indefinitely. As long as surfaces are covered with lead based paint, however, they constitute potential hazards.

Interim Control measures include:

- paint film stabilization
- friction–impact reduction treatments
- specialized cleaning (also called dust removal)
- education of tenants and landlords (on maintenance)

Paint film stabilization

Paint film stabilization repairs deteriorated paint and creates a new, intact painted surface. In the HUD "Lead Safe Work Practice Regulation" (24 CFR Part 35 et.al.), this technique is referred to as "Paint Stabilization". "Paint Stabilization" has a legal definition and specific guidance on what must be included:

(b) *Paint stabilization.*

(1) Interim control treatments used to stabilize deteriorated lead-based paint shall be performed in accordance with the requirements of this section. Interim control treatments of intact, factory applied prime coatings on metal surfaces are not required. Finish coatings on such surfaces shall be treated by interim controls if those coatings contain lead based paint.

(2) Any physical defect in the substrate of a painted surface or component that is causing deterioration of the surface or component shall be repaired before treating the surface or component. Examples of defective substrate conditions include dry-rot, rust, moisture-related defects, crumbling plaster, and missing siding or other components that are not securely fastened.

(3) Before applying new paint, all loose paint and other loose material shall be removed from the surface to be treated. Acceptable methods for preparing the surface to be treated include wet scraping, wet sanding, and power sanding performed in conjunction with a HEPA filtered local exhaust attachment operated according to the manufacturer's instructions.

(4) Dry sanding or dry scraping is permitted only in accordance with § 35.140(e) (i.e., for electrical safety reasons or for specified minor amounts of work).

(5) Paint stabilization shall include the application of a new protective coating or paint. The surface substrate shall be dry and protected from future moisture damage before applying a new protective coating or paint. All protective coatings and paints shall be applied in accordance with the manufacturer's recommendations.

(6) Paint stabilization shall incorporate the use of safe work practices in accordance with § 35.1350.

Certain paint removal practices are prohibited because they create excessive risks to workers and occupants, they are difficult to clean up, and effective substitutes are available. Most of these practices are prohibited by HUD in 24 CFR Part 35.

The advantages of paint film stabilization are that the cost is typically lower than abatement, and it can be performed by trained but relatively unskilled personnel. The disadvantages are that it is not an appropriate control for severely damaged substrates, or high wear areas, friction-impact surfaces. Surface preparation and repair of substrates may generate large amounts of leaded dust and on-going monitoring is essential to maintain a lead-safe environment.

Friction/Impact Surface Treatment

According to HUD, *Friction surface* means an interior or exterior surface that is subject to abrasion or friction, including, but not limited to, certain window, floor, and stair surfaces.

Friction surfaces can be treated either by covering the surfaces with an abrasion resistant material to eliminate the friction or by repairing the component to good working condition so that less dust is created. (See Chapter 11 of the HUD Guidelines.)

Impact surfaces can be protected by placing barriers in front of the impact surface (e.g., new shoe molding in front of baseboards; new chair rail to protect lead-based painted walls from jolts by the backs of chairs). Impact surfaces can also be covered with an impact resistant material (e.g., corner molding over outside comers of walls). Door stops can be replaced.

HUD Lead Safe Work Practice Requirements:

(1)Friction surfaces are required to be treated only if:

(i) Lead dust levels on the nearest horizontal surface underneath the friction surface (e.g., the window sill, window trough, or floor) are equal to or greater than the standards specified in 35.1320(b);
(ii) There is evidence that the paint surface is subject to abrasion; and
(iii) lead-based paint is known or presumed to be present on the friction surface.

(2) Impact surfaces are required to be treated only if:

(i) Paint on an impact surface is damaged or otherwise deteriorated;

(ii) The damaged paint is caused by impact from a related building component (such as a door knob that knocks into a wall, or a door that knocks against its door frame); and
(iii) (iii) Lead-based paint is known or presumed to be present on the impact surface.

(3) Examples of building components that may contain friction or impact surfaces include the following:

(i) Window systems;
(ii) Doors;
(iii) Stair treads and risers;
(iv) Baseboards;
(v) Drawers and cabinets; and
(vi) Porches, decks, interior floors, and any other painted surfaces that are abraded, rubbed, or impacted.

(4) Interim control treatments for friction surfaces shall eliminate friction points or treat the friction surface so that paint is not subject to abrasion.

Examples of acceptable treatments include rehanging and/or plaining doors so that the door does not rub against the door frame, and installing window channel guides that reduce or eliminate abrasion of painted surfaces. Paint on stair treads and floors shall be protected with a durable cover or coating that will prevent abrasion of the painted surfaces. Examples of acceptable materials include carpeting, tile, and sheet flooring.

(5) Interim control treatments for impact surfaces shall protect the paint from impact. Examples of acceptable treatments include treatments that eliminate impact with the paint surface, such as a door stop to prevent a door from striking a wall or baseboard.

(6) Interim control for impact or friction surfaces does not include covering such a surface with a coating or other treatment, such as painting over the surface, that does not protect lead based paint from impact or abrasion.

Advantages of friction-impact treatments are that the cost may be less than component replacement, and although dust is generated, it is less than for many other controls. The disadvantages are that the workers must have experience in the construction skills necessary and if windows are repaired, containment is usually required to control dust exposures.

Dust Removal/Specialized Cleaning

Dust removal/Specialized Cleaning are often used interchangeably and actually employ the same cleaning sequence. However, dust removal is when the cleaning is done as a stand alone Interim Control. Specialized Cleaning is performed at the end of all Lead Hazard Control and as part of "Lead Safe Work Practice" requirements. Both involve extensive and specialized cleaning. In general, they are most effective if the surfaces are "cleanable" (i.e., smooth and intact, thus making dust accessible for cleaning). Undertaking dust removal without controlling
the source of the dust is not generally recommended, since removal only cleans up existing lead

contaminated dust and does not prevent the dust problem from arising again. Dust removal as the only control may be appropriate when the lead source is no longer active (e.g., old lead smelter or nearby building demolition).

§ 35.1345.

(c) *Specialized cleaning.*

After hazard reduction activities have been completed, the worksite shall be cleaned using cleaning methods, products, and devices that are successful in cleaning up dust-lead hazards, such as a HEPA vacuum or other method of equivalent efficacy, and lead-specific detergents or equivalent. of such children.

(e) *Dust-lead hazard control.*

(1) Interim control treatments used to control dust-lead hazards shall be performed in accordance with the requirements of this section. Additional information on dust removal is found in the HUD Guidelines, particularly Chapter 11 (see § 35.1310).

(2) Dust control shall involve a thorough cleaning of all horizontal surfaces, such as interior window sills, window troughs, floors, and stairs, but excluding ceilings. All horizontal surfaces, such as floors, stairs, window sills and window troughs, that are rough, pitted, or porous shall be covered with a smooth, cleanable covering or coating, such as metal coil stock, plastic, polyurethane, or linoleum.

(3) Surfaces covered by a rug or carpeting shall be cleaned as follows:

(i) The floor surface under a rug or carpeting shall be cleaned where feasible, including upon removal of the rug or carpeting, with a HEPA vacuum or other method of equivalent efficacy.

(ii) An unattached rug or an attached carpet that is to be removed, and padding associated with such rug or carpet, located in an area of the dwelling unit with dust-lead hazards on the floor, shall be thoroughly vacuumed with a HEPA vacuum or other method of equivalent efficacy. Protective measures shall be used to prevent the spread of dust during removal of a rug, carpet or padding from the dwelling. For example, it shall be misted to reduce dust generation during removal. The item(s) being removed shall be wrapped or otherwise sealed before removal from the worksite.

(iii) An attached carpet located in an area of the dwelling unit with dust-lead hazards on the floor shall be thoroughly vacuumed with a HEPA vacuum or other method of equivalent efficacy if it is not to be removed

The advantages of dust removal are that normal supplies can be used, with the addition of a HEPA vacuum, and the cleaning can be completed relatively quickly and easily. Dust removal also directly removes the hazard implicated as the highest cause of childhood lead poisoning.

The disadvantages are that cleaning is only effective on fairly smooth, “cleanable” surfaces, and this technique will not be effective at reducing exposures for very long if the source of the dust is not controlled.

Education

Education of both the landlord and the tenant can be, in some cases, a very effective measure for reducing childhood exposures. If the landlord understands the implementation of lead safe work practices and necessary controls into his normal maintenance procedures, control of exposures can become routine. Additionally, if the tenant understands how hand-washing and attention to cleaning and condition of child play areas is important in reducing exposures, the two groups working towards the same goal can provide a safer living environment and higher property values.

Section 10

Lead Hazard Control Plan

The following information is on developing Lead Hazard Control Plans and will include the controls methods assigned to this particular EIBL Investigation.

(Note for EHS-The final product of the risk assessment is a report containing a workable lead hazard control plan. The plan will include a list of the lead hazards found in the dwelling unit (if any) and the control options that can be used for that specific property. In identifying the options, risk assessors should take into account both the lead hazards that are present at the dwelling unit and the owner's needs and resources. While the final decision about what action to take is up to the owner, the risk assessor will often play a prominent role in the decision making process.)

As previously explained in Sections 8 & 9, lead-based paint hazard controls generally fall into two categories:

Interim controls and abatement.

Interim controls (sometimes referred to as in-place management action) are viewed as short term measures to control the lead hazards, while abatement is a "permanent" solution. "Permanent" means any treatment that has an expected design life of at least 20 years.

General Description of Hazard Control Measures

Interim controls are measures designed to temporarily reduce human exposure or possible exposure to lead-based paint hazards. These measures include specialized cleaning, repairs, maintenance, painting, temporary containment, and educational programs for management and residents. Interim controls also include all preparation, cleanup, disposal, and post-abatement clearance testing activities associated with such measures.

Soil Treatments

Different technologies to treat contaminated soil are currently under development. Risk assessors may find it useful to check with local environmental officials to learn which methods are considered most effective in a given geographical area.

The EPA 403 Rule specifically requires abatement of soil if a soil lead hazard has been identified. The former EPA Guidance for lead-contaminated soil allowed the use of Interim Controls if soil levels were unacceptable but not over certain concentrations. THIS IS NO LONGER ALLOWED.

The 403 Rule states:

(4) A soil-lead hazard is present:

(i) In a play area when the soil-lead concentration from a composite play area sample of bare soil is equal to or greater than 400 parts per million; or

(ii) In the rest of the yard when the arithmetic mean lead concentration from a composite sample (or arithmetic mean of composite samples) of bare soil from the rest of the yard (i.e., non-play areas) for each residential building on a property is equal to or greater than 1,200 parts per million.

The regulation also requires, when a soil hazard is identified:

(7) * * *
(i) If the soil is removed:

(A) The soil shall be replaced by soil with a lead concentration as close to local background as practicable, but no greater than 400 ppm.

(B) The soil that is removed shall not be used as top soil at another residential property or child-occupied facility. (ii) If soil is not removed, the soil shall be permanently covered, as defined in § 745.223.

Prohibited Hazard Control Practices

§ 35.140 Prohibited methods of paint removal**.**

The following methods shall not be used to remove paint that is, or may be, lead-based paint:

(a) Open flame burning or torching.

(b) Machine sanding or grinding without a high-efficiency particulate air (HEPA) local exhaust control.

(c) Abrasive blasting or sandblasting without HEPA local exhaust control.

(d) Heat guns operating above 1100 degrees Fahrenheit or charring the paint.

(e) Dry sanding or dry scraping, except dry scraping in conjunction with heat guns or within 1.0 ft. (0.30 m.) of electrical outlets, or when treating defective paint spots totaling no more than 2 sq. ft. (0.2 sq. m.) in any one interior room or space, or totaling no more than 20 sq. ft. (2.0 sq. m.) on exterior surfaces.

When to Avoid Interim Controls

Risk assessors should avoid identifying interim controls as an option when any of the following conditions exist.

- *The property owner is subject to a court order and/or federal/state/local requirement of*

"abatement" of lead-based paint. In these cases, permanent abatement measures and not interim controls are required.

- *The underlying structure is unsound due to moisture or other factors, and the underlying problems will not be repaired. Interim controls address the outermost layer of any surface and do not treat moisture or structural problems that can affect paint condition. Therefore, risk assessors should not identify interim controls as an option to stabilize deteriorated paint unless the causes (other than wear) of the deterioration (e.g., water leaks, moisture, structural cracks) have been fixed. Underlying substrate, moisture, or structural problems will likely cause the paint to deteriorate again.*

- *The building component requiring treatment is rotted or otherwise unsound. Risk assessors should not identify interim controls as an option to treat friction or impact surfaces (e.g., rehanging a door, covering a window sill or installing new tracks, covering a porch floor) if the wood is rotted or metal is rusted and will fall apart in a short time. One rule of thumb is that if more than 75 percent of the component is deteriorated, interim controls to stabilize paint or otherwise control a hazard are inappropriate, and the item should be replaced.*

- *The property has a poor maintenance history that is unlikely to change. Interim controls require regular upkeep; as a result, they are unlikely to succeed without good maintenance. If the property owners' track record indicates that they are unable to maintain the building/unit in good condition (e.g., free of peeling paint, no fundamental structural problems, basic systems working such as heat, plumbing), risk assessors should not recommend interim controls unless significant changes in maintenance and management practices will occur. In this case, risk assessors will need to judge if an owner can provide effective maintenance services. The HUD Guidelines provide a checklist (see Forms 5.6 and 5.7).*

Immediate Lead-Based Paint Hazards

Immediate lead based paint hazards include:

- Lead dust exceeding federal standards. Current EPA/DPOR regulations list the following concentrations as lead dust hazards:

Floors	40 ug/ft2
Interior window sills	250 ug/ft2

- Flaking, peeling, chipping or otherwise delaminating lead-based paint

- Floors or stairs with deteriorated lead-based paint Tooth marks on surfaces covered with lead-based paint

- Lead soil levels in bare soil exceeding 400 ug/g in children's play areas (e.g., sandbox, digging areas, under swing sets)

Activities Accompanying Lead Hazard Control Work

(Note to EHS-When risk assessors identify available options for hazard control, they should be sure to tell property owners about other activities that occur as part of abatement or interim controls.) The following activities, which vary depending on the specific hazard control method, will occur as part of the abatement or interim control activities.

- clearance testing,
- occupant protection and worksite preparation,
- worker protection,
- waste management, and
- ongoing monitoring of hazard control measures.

Clearance Testing

Clearance testing is completed to ensure a unit is free of lead-based paint hazards once cleanup has been done and hazard control activities are completed. It involves:

- a visual examination to determine that hazard control measures are complete and no new lead-based paint hazards exist;
- dust sampling (and possibly soil sampling in the case of exterior work) to verify that levels are below applicable standards.

Clearance is required at the end of all abatement work, and also as part of Lead Safe Work Practices. The EPA 403 Rule requires:

(8) * * *

(ii) Following the visual inspection and any post-abatement cleanup required by paragraph (e)(8)(i) of this section, clearance sampling for lead in dust shall be conducted. Clearance sampling may be conducted by employing single-surface sampling or composite sampling techniques.

(v) * * *
(A) After conducting an abatement with containment between abated and unabated areas, one dust sample shall be taken from one interior window sill and from one window trough (if present) and one dust sample shall be taken from the floors of each of no less than four rooms, hallways or stairwells within the containment area. In addition, one dust sample shall be taken from the floor outside the containment area. If there are less than four rooms, hallways or stairwells within the containment area, then all rooms, hallways or stairwells shall be sampled.

(B) After conducting an abatement with no containment, two dust samples shall be taken from each of no less than four rooms, hallways or stairwells in the residential dwelling or child-occupied facility. One dust sample shall be taken from one interior window sill and window trough (if present) and one dust sample shall be taken from the floor of each

room, hallway or stairwell selected. If there are less than four rooms, hallways or stairwells within the residential dwelling or child-occupied facility then all rooms, hallways or stairwells shall be sampled.

(vii) The licensed inspector or risk assessor shall compare the residual lead level (as determined by the laboratory analysis) from each single surface dust sample with clearance levels in paragraph (e)(8)(viii) of this section for lead in dust on floors, interior window sills, and window troughs or from each composite dust sample with the applicable clearance levels for lead in dust on floors, interior window sills, and window troughs divided by half the number of subsamples in the composite sample. If the residual lead level in a single surface dust sample equals or exceeds the applicable clearance level or if the residual lead level in a composite dust sample equals or exceeds the applicable clearance level divided by half the number of subsamples in the composite sample, the components represented by the failed sample shall be recleaned and retested.

(viii) The clearance levels for lead in dust are 40 µg/ft² for floors, 250 µg/ft² for interior window sills, and 400 µg/ft² for window troughs.

Occupant Protection

Care should be taken to ensure that occupants are protected during hazard control measures. Occupants can be at great risk of lead poisoning by remaining in the work area when the hazard control is occurring, because most such work typically generates leaded dust and paint chips. Risk assessors should strongly recommend that occupants vacate the unit prior to the work beginning. However, this is not always possible. Here are the requirement for Occupant Protection and Worksite Preparation (the two go hand in hand) from HUD:

§ 35.1345 Occupant protection and worksite preparation.

This section establishes procedures for protecting dwelling unit occupants and the environment from contamination from lead-contaminated or lead containing materials during hazard reduction activities.

(a) *Occupant protection.*
(1) Occupants shall not be permitted to enter the worksite during hazard reduction activities (unless they are employed in the conduct of these activities at the worksite), until after hazard reduction work has been completed and clearance, if required, has been achieved.

(2) Occupants shall be temporarily relocated before and during hazard reduction activities to a suitable, decent, safe, and similarly accessible dwelling unit that does not have lead-based paint hazards, except if:

(i) Treatment will not disturb lead based paint, dust-lead hazards or soil lead hazards;

(ii) Only the exterior of the dwelling unit is treated, and windows, doors, ventilation intakes and other openings in or near the worksite are sealed during hazard control work and cleaned afterward, and entry free of dust-lead hazards, soil-lead hazards, and debris is provided;

(iii) Treatment of the interior will be completed within one period of 8-daytime hours, the worksite is contained so as to prevent the release of leaded dust and debris into other areas, and treatment does not create other safety, health or environmental hazards (e.g., exposed live electrical wiring, release of toxic fumes, or on-site disposal of hazardous waste); or

(iv) Treatment of the interior will be completed within 5 calendar days, the worksite is contained so as to prevent the release of leaded dust and debris into other areas, treatment does not create other safety, health or environmental hazards; and, at the end of work on each day, the worksite and the area within at least 10 feet (3 meters) of the containment area is cleaned to remove any visible dust or debris, and occupants have safe access to sleeping areas, and bathroom and kitchen facilities. (3) The dwelling unit and the worksite shall be secured against unauthorized entry, and occupants' belongings protected from contamination by dust lead hazards and debris during hazard reduction activities. Occupants' belongings in the containment area shall be relocated to a safe and secure area outside the containment area, or covered with an impermeable covering with all seams and edges taped or otherwise sealed.

(b) *Worksite preparation*

(1) The worksite shall be prepared to prevent the release of leaded dust, and contain lead based paint chips and other debris from hazard reduction activities within the worksite until they can be safely removed. Practices that minimize the spread of leaded dust, paint chips, soil and debris shall be used during worksite preparation.

(2) A warning sign shall be posted at each entry to a room where hazard reduction activities are conducted when occupants are present; or at each main and secondary entryway to a building from which occupants have been relocated; or, for an exterior hazard reduction activity, where it is easily read 20 feet (6 meters) from the edge of the hazard reduction activity worksite. Each warning sign shall be as described in 29 CFR 1926.62(m), except that it shall be posted irrespective of employees' lead exposure and, to the extent practicable, provided in the occupants' primary language.

Worker Protection

OSHA's interim final regulation on lead in the construction industry prescribes requirements for lead hazard control workers. The HUD guidelines include a detailed discussion of how to apply this standard to residential work, however, the OSHA standard contains the legal performance

requirements which employers must follow.

Waste Management

Previous to the EPA letter verifying that residential waste is exempt from the EPA, Resource Conservation and Recovery Act (RCRA), risk assessors were encouraged to consider the waste management costs associated with each hazard control measure when identifying potential options. However, this is no longer an issue in most states, Virginia included, because Virginia regulation recognize residential waste as exempt, with a few exceptions. Virginia DEQ, Waste Division, still considers residential lead waste as subject to Subtitle C of RCRA if a LISTED HAZARDOUS WASTE such as the solvent, methylene chloride, is used for stripping. The entire list of "Listed Wastes can be found in 40 CFR Subtitle C "Listed Hazardous Wastes".

Ongoing Monitoring of Hazard Control Measures

Both interim control and abatement measures should be monitored on a regular basis to ensure that they are still intact and that lead-based paint hazards have not reappeared. In general, interim controls require more frequent monitoring than abatement since they are designed as short term measures. Only units that have undergone a complete unit abatement or are free of lead-based paint should be exempted from ongoing monitoring. On-going monitoring schedules should be provided and reviewed with the owner after Hazard Control Options have been chosen, and included in the Lead Hazard Control Plan.

HAZARDS IDENTIFIED DURING EIBL INVESTIGATION

Paint Lead Hazards

1. Deteriorated lead based paint on the exterior side of the windows.
2. Deteriorated lead based paint on some of the interior window trim
3. Deteriorated lead based paint on all of the interior doors
4. Deteriorated lead based exterior doors
5. Deteriorated lead based interior hand railing
6. Deteriorated lead based stairway treads
7. Deteriorated lead based bathroom cabinets (upstairs bathroom only)

Dust Lead Hazards

8. Leaded dust on the floor of the child's bedroom

9. Leaded dust on stair treads.

Soil Lead Hazards

10. Bare soil under and around play equipment

Other Sources of Lead

11. Mother's lead containing key ring with bird ornament

Appropriate Controls for Hazards

The range of options is listed below. When the"X"is in bold, this indicates the option chosen by the building owner based on his financial situation.

Risk Assessors' Menu of Available Hazard Control Options								
	Hazards Identified							
Treatment Option								
	Det. LBP on the ext. side of the windows.	Det. LBP on int. window trim (not all)	Det. LBP on all int. doors	Det. LBP on ext. doors	Det. LBP on int. hand railing	Det. LBP on stair treads		
Dust removal								
Paint film stabilization		X						
Friction reduction treatments	X		X	X	X	X		
Impact reduction treatments			X	X				
Encapsulation		X						
Enclosure		X			X	X		
Paint removal by heat gun	X	X	X	X	X	X		
Paint removal by chemical	X	X	X	X	**X**	**X**		
Paint removal by contained	X			X				

abrasive (HEPA control)								
Component replacement Building component or article in question)	**X**	**X**	X	X	X	X		
Off-site removal		X	**X**	**X**	X			
Soil paving								
Soil removal and replacement								

Risk Assessors' Menu of Available Hazard Control Options								
	Hazards Identified							
Treatment Option								
	Det. LBP on bathroom cabinets	Leaded dust on child's bedroom floor (lead poisoned child)	Leaded dust on stair treads	Bair soil under play equipment	Key ring			
Dust removal		**X**	**X**					
Paint film stabilization	X							
Friction reduction treatments								
Impact reduction treatments								
Encapsulation	X							
Enclosure								
Paint removal by heat gun	X							
Paint removal by chemical	X							
Paint removal by contained abrasive	X							
Component replacement	**X**				**X**			

Building component or article in question)								
Off-site removal	X							
Soil paving				X				

Soil removal and replacement				**X**				

Options Chosen

Mrs. Martha Owner and her husband have chosen the options indicated above. The doors are original to the structure and are substantial, and have aesthetic appeal. They first plan is to remove the interior doors, and take them offsite to strip the doors and reseal them, and re-hang the doors. Both Mrs. Owner and her husband have received training as Lead Supervisors, and currently, Virginia allows them to complete their own offsite work. They then plan to replace the doors, and as weather allows, remove the two exterior doors (supplying temporary doors) and to off-site strip, reseal and replace these doors also.

The owners plan to hire an abatement contractor to replace the windows and trim, remove the paint from the hand rail and stair treads, and to replace the bathroom cabinet. The work will involve worksite preparation, and the tenants will be out of town during the three-day weekend when the work is planned. The abatement contract calls for specialized cleaning and, due to the presence of an EIBLL child, the Health Department will conduct clearance sampling.

During the same weekend, the owners will remove the soil to a depth of at least 8" around the play equipment, take the soil away and replace it with sand which has been verified as non-lead containing.

The mother of the child has agreed to give the key ring to the Health Department as an example of problem objects.

The owners have applied to the local Redevelopment and Housing Authority for help in paying for and/or financing these options.

On-Going Monitoring Schedule

The following is the schedule originally published by EPA and HUD, but modified to include changes from the EPA 403 Rule.

Table 6.1 Standard Reevaluation Schedules (See Notes to Table 6.1.)				
Schedule	Evaluation Results	Action Taken	Reevaluation Frequency	Visual Survey (by owner or owner's representative)
1	Combination risk assessment/inspection finds no leaded dust or soil and no lead-based paint.	None	None	None
2	No lead-based paint hazards found during risk assessment conducted before hazard control or at clearance (hazards include dust and soil).	None	3 years	Annually and whenever information indicates a possible problem
3	The average of leaded dust levels on all floors, interior window sills, or window troughs sampled exceeds the applicable standard, but by less than a factor of 10.	A. Interim Controls and/or hazard abatement (or mixture of the two), including but not necessarily limited to dust removal. This	1 year, 2 years	Same as Schedule 2, except for encapsulants. The first visual survey of encapsulants should be done one month after

		schedule does not include window	1 year	clearance; the second should be done six months later and annually thereafter.
		B. Treatments specified in section A plus replacement of all windows with lead hazards	None	
		C. Abatement of all lead based paint using encapsulation or enclosure	None	Same as Schedule 3 above
		D. Removal of all lead based paint		None
4	The average of leaded dust levels on all floors, interior window sills, or window troughs sampled exceeds the applicable standard by a factor of 10 or more.	A. Interim controls and/or hazard abatement (or mixture of the two), including, but not necessarily limited to, dust removal. This schedule does not include window replacement.	6 months, 1 year, 2 years	Same as Schedule 3
		B. Treatments specified in section A plus replacement of	6 months, 2 years	Same as Schedule 3

		all windows with lead hazards		
		C. Abatement of all lead-based paint using encapsulation and enclosure,	None	Same as Schedule 3
		D. Removal of all lead-based paint	None	None
5	No leaded dust or leaded soil hazards identified, but lead-based paint or lead-based paint hazards are found.	A. Interim controls or mixture of interim controls and abatement (not including window replacement)	2 years	Same as Schedule 3
		B. Mixture of interim controls and abatement, including window replacement	3 years	Same as Schedule 3
		C. Abatement of all lead-based paint hazards, but not all lead-based paint	4 years	Same as Schedule 3
		D. Abatement of all lead-based paint	None	Same as Schedule 3

		using encapsulation or enclosure		
		E. Removal of all lead-based paint	None	None
6	Bare leaded soil > 400 ppm In child's play areas	ABATEMENT: Remove and Replace with clean soil <400 ppm lead or as close to background as possible, or Permanently pave area	None	During other visual assessments, look for new bare areas
7	Bare leaded soil > 1200 ppm In residential areas not identified as child's play areas	ABATEMENT: Remove and Replace with clean soil <400 ppm lead or as close to background as possible, or Permanently pave area	None	None for removal, annually to identify new bare spots or deterioration of paving

Notes to Table 6.1:

1. When more than one schedule applies to a dwelling, use the one with the most stringent reevaluation schedule. Do not use the results of a reevaluation for Schedule 2.

2. A lead-based paint hazard includes deteriorated lead-based paint and leaded dust and soil above applicable standards

.

3. The frequency of reevaluations and the interval between reevaluations depends on the findings at each reevaluation and the action taken. For example, a dwelling unit or common area falling under Schedule 3.A would be reevaluated one year after clearance. If no lead-based paint hazards are detected at that time, the unit or area would be reevaluated again two years after the first reevaluation. If no hazards are found in the second reevaluation, no further reevaluation is necessary, but annual visual monitoring should continue.

If, on the other hand, the unit or common area fails a reevaluation, a new reevaluation schedule should be determined based on the results of the reevaluation and the action taken. For instance, if the reevaluation finds deteriorated lead-based paint but no lead-contaminated dust, and the action taken is paint stabilization. Schedule 5.A would apply, which indicates that the next reevaluation should be in two years. If, however, the owner of this same property decides to abate all lead-based paint hazards instead of doing only paint stabilization, the property would move to Schedule 5.C, which calls for reevaluation four years from the date of clearance after the hazard abatement

All lead based paint on doors, hand rail and stair treads will be removed. The paint will also be removed from all doors. For these surfaces, the Monitoring Schedule is 3D.

The lead-contaminated soil is also to be removed, and appears to be coming from the window trim near the play areas. The window trim will be replaced, and this should remove the source of the problem. The Monitoring Schedule for the soil is 6.

The mother is encouraged to use care when selecting everyday objects (such as the key ring) that children may routinely handle and put into their mouths.

Appendix J

Questions to Ask When Reviewing Risk Assessment Reports

1) Can it be verified that the risk assessor visited the site and collected all samples personally? Did the risk assessor indicate someone else (not certified as a risk assessor) collected the dust samples? Who signed the sheets delivering the samples to the laboratory for analysis ("chain of custody" forms)? What date does the chain of custody form indicate the samples were taken/delivered?

2) Some XRF instruments have the capability to measure lead just in the surface layers and all the way to the substrate. If the XRF results are listed as K-shell and L-shell readings, does the risk assessor explain what they mean? K-shell readings evaluate the lead content in all layers of paint down to the substrate. The L-shell readings evaluate the lead content in surface layers of paint.

3) Does the risk assessor point out that even if XRF results are "negative," that is, below 1.0 mg/cm2, paint containing lead can create significant dust when disturbed during rehabilitation and worker/occupant exposures can be an issue. OSHA requires employee exposure assessments/monitoring if there is any level of lead in the paint - no matter what the XRF results are (positive or negative). Also on handout #4, RA Report checklist from previous edition of CPD manual.

4) If the risk assessor could not access all surfaces for testing, does he indicate the surfaces that were inaccessible and not tested?

5) Does the risk assessor include instructions on how the read the test data sheets?

6) Does the report or floor plan clearly indicate where the LBP and LBP hazards are? If the paint content is similar between components within a room but the condition is different, can you identify the hazard control options to use?

7) Does the risk assessment report indicate the XRF calibrations were checked before work, every 4 hours and at the end of sampling?

8) Did the risk assessor sample all deteriorated varnish, stains, and other coatings that are deteriorated or to be disturbed, in addition to the paint?

9) Does the risk assessment indicate the likely source of all dust-lead hazards? Do high lead dust levels have an obvious source? If paint in a location was tested and is positive, did the risk assessor take dust samples to see if associated hazards are present (in living areas where the occupants spend time)?

10) Does the risk assessor clearly indicate the overall condition of all components indicated as hazardous? Remember, <u>to be a hazard, a friction or impact surface must also have dustlead</u>

above the HUD/EPA levels. If lead hazard reduction is recommended for windows, for example, is it clear from the report what the condition of the windows are? The condition of components weighs heavily when deciding between performing interim controls vs. abatement. Ex: If the risk assessor indicates doors or windows are chipped, did the risk assessor take dust samples also? What is the overall condition of the windows?

11) Did the risk assessor send sample blanks to the lab with the actual samples to check the laboratory's accuracy?

12) For dust wipe samples on window sills or other curved or irregular surfaces, did the risk assessor accurately measure the sampling area and report it to the laboratory or does the risk assessor state the surface area wiped for every dust sample taken 12 X 12 inches?

13) If the risk assessor indicates window trough samples show hazards, this is incorrect. There is no hazard identification for window troughs since 3/6/01. The window trough level of 400 ug/ft2 is used only for clearance.

14) Can it be verified that the risk assessor visited the site and collected all samples personally? Did the risk assessor indicate someone else (not certified as a risk assessor) collected the dust samples? Who signed the sheets delivering the samples to the laboratory for analysis ("chain of custody" forms)? What date does the chain of custody form indicate the samples were taken/delivered?

15) Some XRF instruments have the capability to measure lead just in the surface layers and all the way to the substrate. If the XRF results are listed as K-shell and L-shell readings, does the risk assessor explain what they mean? K-shell readings evaluate the lead content in all layers of paint down to the substrate. The L-shell readings evaluate the lead content in surface layers of paint.

16) Does the risk assessor point out that even if XRF results are "negative," that is, below 1.0 mg/cm2, paint containing lead can create significant dust when disturbed during rehabilitation and worker/occupant exposures can be an issue. OSHA requires employee exposure assessments/monitoring if there is any level of lead in the paint - no matter what the XRF results are (positive or negative). Also on handout #4, RA Report checklist from previous edition of CPD manual.

17) If the risk assessor could not access all surfaces for testing, does he indicate the surfaces that were inaccessible and not tested?

18) Does the risk assessor include instructions on how the read the test data sheets?

19) Does the report or floor plan clearly indicate where the LBP and LBP hazards are? If the paint content is similar between components within a room but the condition is different, can you identify the hazard control options to use?

20) Does the risk assessment report indicate the XRF calibrations were checked before work, every 4 hours and at the end of sampling?

21) Did the risk assessor sample all deteriorated varnish, stains, and other coatings that are deteriorated or to be disturbed, in addition to the paint?

22) Does the risk assessment indicate the likely source of all dust-lead hazards? Do high lead dust levels have an obvious source? If paint in a location was tested and is positive, did the risk assessor take dust samples to see if associated hazards are present (in living areas where the occupants spend time)?

23) Does the risk assessor clearly indicate the overall condition of all components indicated as hazardous? Remember, to be a hazard, a friction or impact surface must also have dustlead above the HUD/EPA levels. If lead hazard reduction is recommended for windows, for example, is it clear from the report what the condition of the windows are? The condition of components weighs heavily when deciding between performing interim controls vs. abatement. Ex: If the risk assessor indicates doors or windows are chipped, did the risk assessor take dust samples also? What is the overall condition of the windows?

24) Did the risk assessor send sample blanks to the lab with the actual samples to check the laboratory's accuracy?

25) For dust wipe samples on window sills or other curved or irregular surfaces, did the risk assessor accurately measure the sampling area and report it to the laboratory or does the risk assessor state the surface area wiped for every dust sample taken 12 X 12 inches?

26) If the risk assessor indicates window trough samples show hazards, this is incorrect. There is no hazard identification for window troughs since 3/6/01. The window trough level of 400 ug/ft2 is used only for clearance.

Appendix K

Risk Assessment Report Checklist

1. Summary

- **Identification Information**
  - Full address of property and unit (if applicable)
  - Property owner's address and telephone number
  - Name, address, and telephone number of risk assessor and firm
  - Certification/license number of risk assessor and firm
- **Basic Inspection Information**
  - Date of risk assessment and start and stop time
  - Brief description of procedures used or reference to documented methods
  - Brief description of the type of risk assessment conducted
  - Make, model, serial number, and source date (if applicable) for XRF machine
- **Summary of Results**
  - Brief history of renovation, repairs, and painting at property and discussion of building condition
  - List of lead hazards identified including location and in rank order
  - Summary of optional sampling results such as water tests (if applicable)
  - Brief summary analysis of previous XRF testing reports (if applicable)
- **Other Information**
  - Statement on property owner's responsibility to disclose lead-based paint information
  - Notice that deteriorated or disturbed painted surfaces may still contain lead-based paint and may pose a hazard, especially during renovation.

2. Full Explanation of Methodology and Results

- **Results**
  - History of renovation, repairs, and painting at property
  - Discussion of building condition
  - List of lead hazards: location, type, priority hazards indicated
  - Complete paint sample results
  - Complete dust testing results
  - Complete soil sampling results
  - Optional sampling results such as water tests (if applicable)
- **Test Methods**
  - Full description of procedures used or reference to documented methods
  - Full description of the type of risk assessment conducted
  - Full description of quality control procedures for XRF machine

Analysis of previous XRF testing reports (if applicable)

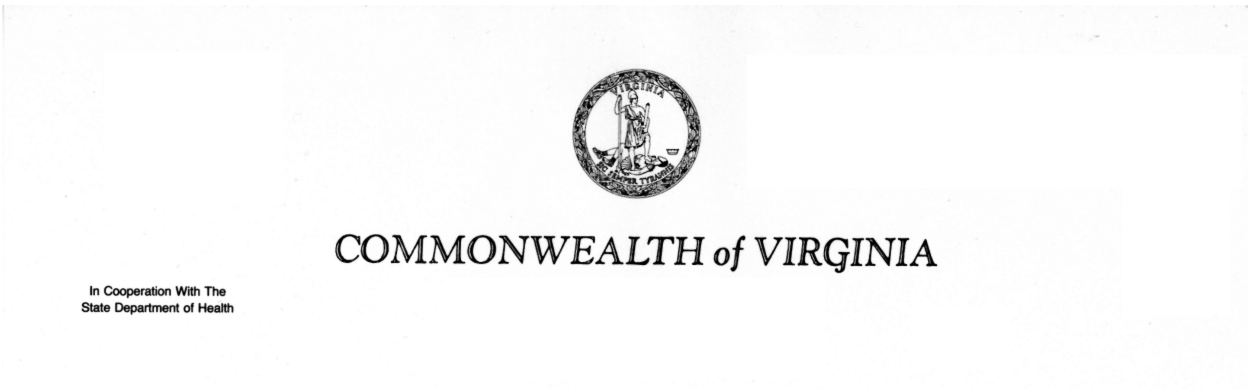
3. Lead Hazard Control Plan

- Recommended interim control and/or abatement options
- Reevaluation schedule
- Risk assessor's signature and date

4. Forms to be Included

- Laboratory analysis result forms
- All laboratory and XRF raw data

Appendix L EXAMPLE TENANT LETTER



Date

Ms. Mary A. Tenant
1234 Popular Road
Anywhere, VA 23804

Dear Ms. Tenant:

The final report for the environmental intervention blood lead investigation performed at your home on <date> has been completed. The owner has been made aware of the areas that need addressing. The report has been sent to the owner:

Martha D. Owner
123 Different Street
Anywhere, VA 23804
(804) 555-1234

Lead-based paint hazards were found that could adversely affect any child's health under six that may reside at this address. A environmental intervention blood lead investigation was performed on (date). The following surfaces and situations are lead hazards:

Paint Lead Hazards

1. Deteriorated lead based paint on the exterior side of the windows.
2. Deteriorated lead based paint on some of the interior window trim
3. Deteriorated lead based paint on all of the interior doors
4. Deteriorated lead based paint on exterior doors
5. Deteriorated lead based paint on interior hand railing
6. Deteriorated lead based paint on stairway treads
7. Deteriorated lead based paint on bathroom cabinets (upstairs bathroom only, this is not a friction/impact problems, only front & sides)

Dust Lead Hazards

8. Leaded dust on the floor of the child's bedroom

9. Leaded dust on stair treads.

Soil Lead Hazards

10. Bare soil under and around play equipment

Other Sources of Lead

11. Mother's lead containing key ring with bird ornament

The owner of the property has agreed to correct these problems. However, until the work is completed, it is very important that you immediately thoroughly wet clean all floors, including the stairs, and window sills in the house. Also wet wipe the hand rail to the stairs. Please use the information found in the pamphlet *Protect Your Family from Lead* which was provided for you. Cleaning these areas with a wet clean rag wrung from a warm water solution with a ¼ cup of automatic dishwasher detergent or an all-purpose cleaner can be very effective in reducing the levels of lead dust. It has also been found that method and physical effort are more important in obtaining good results than the use of a particular type of detergent or cleaner. It is important to wash mops and rags thoroughly after each use to prevent recontamination.

An ordinary household vacuum cleaner and dry dusting and sweeping are not recommended for lead dust cleaning. They contribute to the spreading of lead dust by causing the particles to become airborne. A high-efficiency particulate air (HEPA) filter equipped vacuum cleaner should be used should any vacuuming take place. This is a special type of vacuum that can remove very small lead particles from floors, windowsills, and carpets and keep them inside the vacuum cleaner. If this type of vacuum is not available, the floors should not be vacuumed, only mopped, until the owner completes the control activities.

The children should not be playing in the bare areas under the play equipment until the bare soil has been controlled. After the owner has completed activities on the bare area under the play equipment, thoroughly wash the equipment down with the hose and allow the area to dry before using the play equipment.

As per our agreement, the health department now has the key ring in our possession. Thank you for understanding the need to remove this object from the child's environment. If you have any questions or concerns about this information, please contact us at_____.

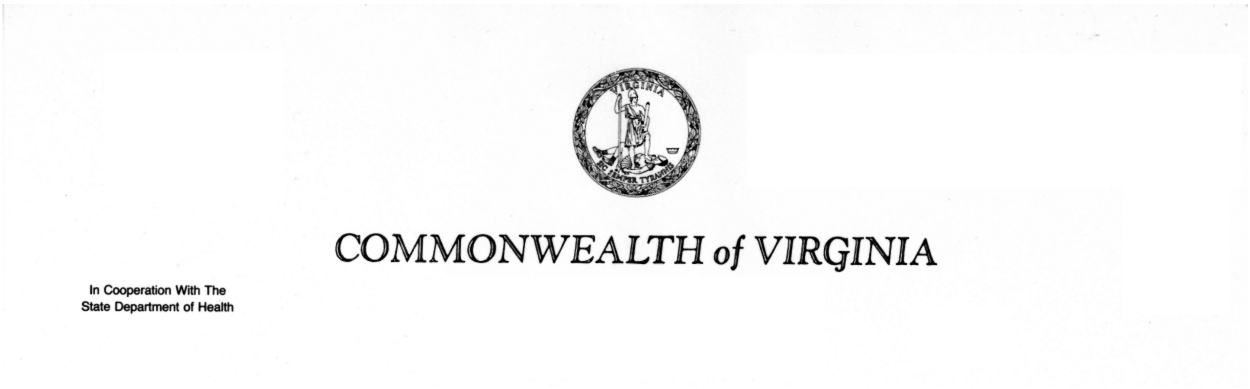
(Address other items that may have been sampled)

Once again, please feel free to contact me should you have any questions. Thank you for your cooperation.

Sincerely,

David B. Joe
Environmental Health Specialist
Childhood Lead Poisoning Prevention Program
(804) 555-4321, ext. 123

Appendix M



EXAMPLE
SCOPE OF ABATEMENT WORK

August 15, 1999

Prepared for the Property Owner: Mr. Martin E. Owns
357 Different Street
Somewhere, VA 23800
(804) 555-2468

For the Property of: 1234 Busy Street, Somewhere, VA 23800

Prepared by: David B. Joe, E.H.S.
Risk Assessor VA # 0000 000000
Any Health District
123 Healthy Street
Somewhere, VA 23800
(804) 555- 4321, ext. 123

It shall be unlawful for an owner to hire anyone to perform lead-based paint activities within the Commonwealth without that person obtaining a license from the Virginia Department of Professional and Occupational Regulation located in Richmond. Should the owner hire someone or intend to perform lead based paint activities or any type of renovations on the above listed property, please contact the health department for safety guidelines. Precautions are needed when performing this type of work. If you choose to hire a professional, you can contact DPOR at (804) 367-8595 for a listing of licensed contractors

Risk assessors should strongly recommend that occupants vacate the unit prior to the work beginning. However, this is not always possible. Here are the requirement for Occupant Protection and Worksite Preparation (the two go hand in hand) from HUD:

Occupant protection and worksite preparation.

This property participates in the HUD Section 8 rental-based tenant assistance program, therefore the following HUD requirements apply for occupant protection and worksite preparation. This section establishes procedures for protecting dwelling unit occupants and the environment from contamination from lead-contaminated or lead containing materials during hazard reduction activities.

(a) *Occupant protection.*
(1) Occupants shall not be permitted to enter the worksite during hazard reduction activities (unless they are employed in the conduct of these activities at the worksite), until after hazard reduction work has been completed and clearance, if required, has been achieved.

(2) Occupants shall be temporarily relocated before and during hazard reduction activities to a suitable, decent, safe, and similarly accessible dwelling unit that does not have lead-based paint hazards, except if:

i. Treatment will not disturb lead based paint, dust-lead hazards or soil lead hazards;

ii. Only the exterior of the dwelling unit is treated, and windows, doors, ventilation intakes and other openings in or near the worksite are sealed during hazard control work and cleaned afterward, and entry free of dust-lead hazards, soil-lead hazards, and debris is provided;

iii. Treatment of the interior will be completed within one period of 8-daytime hours, the worksite is contained so as to prevent the release of leaded dust and debris into other areas, and treatment does not create other safety, health or environmental hazards (e.g., exposed live electrical wiring, release of toxic fumes, or on-site disposal of hazardous waste); or

iv. Treatment of the interior will be completed within 5 calendar days, the worksite is contained so as to prevent the release of leaded dust and debris into other areas, treatment does not create other safety, health or environmental hazards; and, at the end of work on each day, the worksite and the area within at least 10 feet (3 meters) of the containment area is cleaned to remove any visible dust or debris, and occupants have safe access to sleeping areas, and bathroom and kitchen facilities. (3) The dwelling unit and the

v. Worksite shall be secured against unauthorized entry, and occupants' belongings protected from contamination by dust lead hazards and debris during hazard reduction activities. Occupants' belongings in the containment area shall be relocated to a safe and secure area

outside the containment area, or covered with an impermeable covering with all seams and edges taped or otherwise sealed.

(b) *Worksite preparation*

. (1) The worksite shall be prepared to prevent the release of leaded dust, and contain lead based paint chips and other debris from hazard reduction activities within the worksite until they can be safely removed. Practices that minimize the spread of leaded dust, paint chips, soil and debris shall be used during worksite preparation.

(2) A warning sign shall be posted at each entry to a room where hazard reduction activities are conducted when occupants are present; or at each main and secondary entryway to a building from which occupants have been relocated; or, for an exterior hazard reduction activity, where it is easily read 20 feet (6 meters) from the edge of the hazard reduction activity worksite. Each warning sign shall be as described in 29 CFR 1926.62(m), except that it shall be posted irrespective of employees' lead exposure and, to the extent practicable, provided in the occupants' primary language.

Specific Worksite Preparation:

Doors will be moved offsite for paint removal. Contractor is not responsible for this activity, but should coordinate other activities with building owner. This will ensure that lead control activities performed by the contractor will not adversely affect the areas completed by the building owner and vice versa.

In rooms where windows will be replaced, contractor shall build mini enclosures around the window area or otherwise protect the area surrounding the window. Furniture that has not been removed shall be cleaned, moved to the center of the room, covered with plastic sheeting, and sealed to the floor with duct tape. Floor areas should be cleaned prior to covering to prevent recontamination when uncovering takes place.

Window Treatment:

Install vinyl thermal replacement windows through out according to manufacturers' recommendation with all appropriate trims and molding. Window trim will be replaced inside. Exterior window trim was replaced three years previously and is not deteriorated but should be included in the specialized cleaning prior to clearance testing.

Interior Friction Surfaces:

Peel Away 1 will be used on the stair treads and hand rail to remove the lead based paint. This method will be very effective for these smooth surfaces. It will generate the least amount of leaded dust during removal. However, the surrounding areas must be protected with 6 mil poly while the work is under way. After the Peel Away has removed the paint, the wood will be neutralized with the

Peel Away neutralizer. The wood will then be scrubbed with nylon brushes and detergent, rinsed and washed. After the wood is completely dry, the wood will be sealed with 2 layers of acrylic sealer.

(The following does not apply to the specific example given in the example of a Lead Hazard control Plan Appendix L, but is included as an additional reference)

Interior Friction Surfaces:
HUD has the following requirements for all Friction/Impact surfaces:

Friction surfaces are required to be treated only if:

Lead dust levels on the nearest horizontal surface underneath the friction surface (e.g., the window sill, window trough, or floor) are equal to or greater than the standards specified in 35.1320(b);

(ii) There is evidence that the paint surface is subject to abrasion; and

(iii) Lead-based paint is known or presumed to be present on the friction surface.

Impact surfaces are required to be treated only if:

(i) Paint on an impact surface is damaged or otherwise deteriorated;

(ii) The damaged paint is caused by impact from a related building component (such as a door knob that knocks into a wall, or a door that knocks against its door frame); and

(iii) Lead-based paint is known or presumed to be present on the impact surface.

Examples of building components that may contain friction or impact surfaces include the following:

(i) Window systems;

(ii) Doors;

Stair treads and risers;

(iv) Baseboards;

(v) Drawers and cabinets; and

(vi) Porches, decks, interior floors, and any other painted surfaces that are abraded, rubbed, or impacted.

Interim control treatments for friction surfaces shall eliminate friction points or treat the friction surface so that paint is not subject to abrasion. Examples of acceptable treatments include rehanging and/or planing doors so that the door does not rub against the door frame, and installing window channel guides that reduce or eliminate abrasion of painted surfaces. Paint on stair treads and floors shall be protected with a durable cover or coating that will prevent abrasion of the painted surfaces. Examples of acceptable materials include carpeting, tile, and sheet flooring.

Interim control treatments for impact surfaces shall protect the paint from impact. Examples of acceptable treatments include treatments that eliminate impact with the paint surface, such as a door stop to prevent a door from striking a wall or baseboard.

Interim control for impact or friction surfaces does not include covering such a surface with a coating or other treatment, such as painting over the surface, that does not protect lead based paint from impact or abrasion.

(d) *Chewable surfaces.*
(1) Chewable surfaces are required to be treated only if there is evidence that a child of less than 6 years of age has chewed on the painted surface, and lead-based paint is known or presumed to be present on the surface.
(2) Interim control treatments for chewable surfaces shall make the lead based paint inaccessible for chewing by children of less than 6 years of age. Examples include enclosures or coatings that cannot be penetrated by the teeth of such children.

Interior Non-Friction Surfaces: (Site Specific)

The bathroom cabinet in the upstairs bathroom will be removed and replaced with a new component. All personal removable items, including towels, shower curtain, toiletries, etc. should be removed from the bathroom and cleaned by the tenant prior to cabinet replacement. The floor around the cabinet should be protected with 6 mil poly. The area where the cabinet contact the wall will be misted and scored prior to disturbing the cabinet. The cabinet will also be misted. The cabinet will be gently pried from the wall. If nails or screws holding the cabinet in place can be removed prior to removing the cabinet, this will be done before trying to loosen the cabinet from the wall. After removal, the cabinet will be wrapped while in the bathroom and taken to the transportation vehicle.

Interior Non-Friction Surfaces: (general scope of work information not specific for the EIBLI example)

Stabilize paint film surfaces on all non-friction surfaces as identified as lead containing according to the EIBLI report prepared the Local Health District on (date).HUD requires that Paint Stabilization include the following steps:

> (1) Interim control treatments used to stabilize deteriorated lead-based paint shall be performed in accordance with the requirements of this section. Interim control treatments of intact, factory applied prime coatings on metal surfaces are not required. Finish coatings on such surfaces shall be treated by interim controls if those coatings contain lead based paint.
> (2) Any physical defect in the substrate of a painted surface or component that is causing deterioration of the surface or component shall be repaired before treating the surface or component. Examples of defective substrate conditions include dry-rot, rust, moisture-related defects, crumbling plaster, and missing siding or other components that are not securely fastened.
>
> (3) Before applying new paint, all loose paint and other loose material shall be removed from the surface to be treated. Acceptable methods for preparing the surface to be treated include

wet scraping, wet sanding, and power sanding performed in conjunction with a HEPA filtered local exhaust attachment operated according to the manufacturer's instructions.
(4) Dry sanding or dry scraping is permitted only in accordance with § 5.140(e) (i.e., for electrical safety reasons or for specified minor amounts of work).
(5) Paint stabilization shall include the application of a new protective coating or paint. The surface substrate shall be dry and protected from future moisture damage before applying a new protective coating or paint. All protective coatings and paints shall be applied in accordance with the manufacturer's recommendations.
(6) Paint stabilization shall incorporate the use of safe work practices in accordance with § 35.1350.

Safe Work practices are required for all lead hazard control activities performed on this property. This includes training (the worker/supervisor training completed by the abatement contractor is in compliance), worksite preparation and occupant protection as described above, specialized cleaning, an clearance testing.

Miscellaneous Interior Components: (general scope of work information not specific for the EIBLI example)

- Dispose of existing mini-blinds and replace with new lead-free mini-blinds.
- Carpeting in the living room needs replacing.
- All remaining carpets and rugs should be vacuumed and shampooed.

Exterior & Siding Treatment: (general scope of work information not specific for the EIBLI example)

Stabilize and prime all deteriorated paint surfaces via a wet method to include the exterior siding (including the foundation), exterior window trim, soffit/fascia assembly, and the porch columns, railings, ceiling, and skirt board. Encapsulate with two coats of lead specific encapsulant paint and repaint with a premium grade exterior paint.

Soil Treatment: (Site Specific)

Remove and replace bare soil under play equipment. Six mil plastic should be used to protect the surrounding ground during removal of the bare contaminated soil. The container or vehicle used for soil transport should be located close to the removal area and the ground under the container or vehicle should also be protected so that the other areas of the yard are not contaminated during soil removal. After 8" of soil is removed, 2" of crush and run gravel or clay soil should be tamped into the bare hole to help prevent children accessing the soil below. Property owners will then place 8-10" of clean sand under the play equipment and surrounding area. No hard landscaping material will be placed around the sand because of the potential for injuries if the children fall onto hard surfaces.

Interior Clean-up:

Upon completion of abatement activities, all rooms will be cleaned. Clean all horizontal surfaces thoroughly, starting from the ceiling down to the floor, using a HEPA vacuum, then a water and cleaner solution, and then go over surfaces again with a final rinse. When surfaces are dry, finish with a second HEPA vacuuming to make ready for clearance testing.

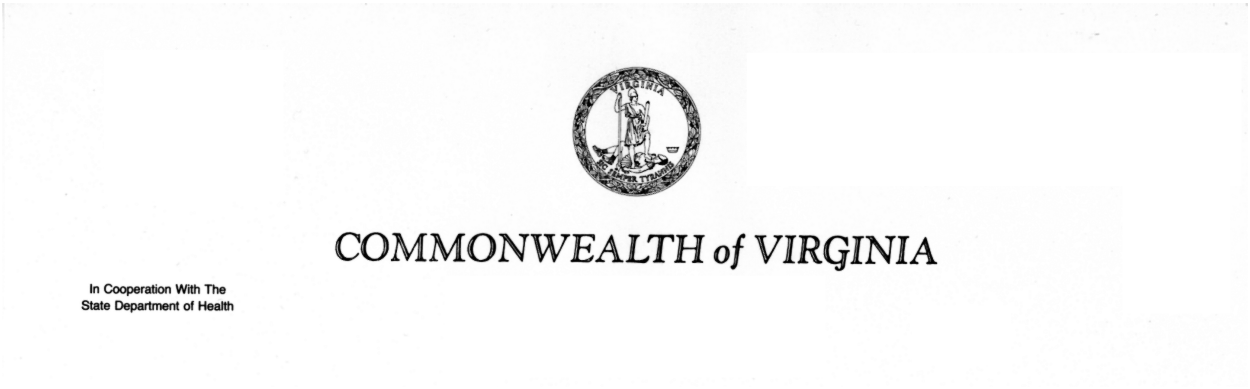
Exterior Preparation and Cleanup

The ground under the windows must be protection with 6 mil poly during window replacement. Care should be taken not to leave paint chips or debris in the yard when removing and disposing of the old windows. In order to prevent release of debris, windows should be wrapped in plastic prior to transporting. All used poly should be carefully folded and disposed upon completion of window replacement. Any paint debris will be carefully removed so that the yard is safe for the children.

Porch floors will be cleaned with the HEPA vacuum, wet mop, HEPA vacuum sequence described above. At the end of all abatement and interior cleaning.

Appendix N
EXAMPLE

Clearance Evaluation & Summary
for the property of
1234 Busy Street, Somewhere, VA 23800



Date

Prepared for the Property Owner: Mr. Martin E. Owns
357 Different Street
Somewhere, VA 23800
(804) 555-2468

Prepared by: David B. Joe, E.H.S.
Lead Inspector/Risk Assessor VA # 0000 000000
Any Health District
123 Healthy Street
Somewhere, VA 23800
(804) 555- 4321, ext. 123

Clearance testing has been completed for 1234 Busy Street, Somewhere, VA 23800. The clearance evaluation included a preliminary and final visual inspection for post abatement clearance followed by dust wipe sampling. Dust wipe samples were collected in accordance with the *EPA 403 Rule: Lead; Identification of Dangerous Levels of Lead; Final Rule* and Virginia DPOR *Lead-Based Paint Activities Regulations.*

Lead control activities were conducted throughout this residence without containment. As required by both EPA and DPOR, for an abatement without a containment area, two dust samples (one from a window sill or well and one floor) were collected from each of no less than four rooms, hallways or stairwells in the residential dwelling.

The current Federal (EPA) and Virginia clearance standards for lead in surface dust for single wipe samples are as follows:

FLOORS: 40 micrograms per square fool (ug/ft2)

WINDOW SILLS: 250 micrograms per square foot (ug/ft2)

WINDOW TROUGH (WELLS): 400 micrograms per square fool (ug/ft2).

Samples results greater than or equal to the standards represent a failure. If any floor sample concentration is ≥40 (ug/ft2), then the floor which failed clearance and all unsampled floors must be recleaned and clearance sampling must be performed again until all floor surfaces tested pass. This requirement is the same for any window sill or window trough which fails clearance.

Initial clearance testing was performed on (DATE). All window trough and sill samples were below clearance and therefore passed. The floor sample collected from the kitchen failed clearance. The floor samples collected upstairs in the 3 year old child's bedroom and the older children's bedroom both passed clearance. Floors in the upstairs hall, the parents bedroom and the upstairs bathroom (none of these floors were sampled in the first clearance sample collection) were re-cleaned, as well as all floors downstairs. A second and final clearance was performed on (DATE). and laboratory analysis indicated lead dust levels were below established criteria. The visual inspection noted no immediate hazards. The property of 1234 Busy Street has met Virginia and EPA clearance criteria for re-occupancy. Enclosed are the dust sample results and lab data as well as the diagrams indicating where samples were taken.

All lead hazards identified during the EIBL investigation have been completed. All windows and trim have been replaced with new components, and the lead-based paint on all doors was removed, as well as the paint on the stair treads and hand rail. The soil lead hazard (bare lead-contaminated soil under and around the play equipment) was removed. However, owner and tenant both should periodically monitor the yard near the house for bare areas which could also be contaminated with lead.

The Federal Residential Lead-Based Paint Hazard Reduction Act of 1992, 42 U.S.C. 4852d, requires sellers and landlords of most residential housing built before 1978 to disclose all available and reports concerning lead-based paint and/or lead-based paint hazards, **including the test results contained in this notice**, to purchasers and tenants at the time of sale or lease or upon lease renewal. This disclosure must occur even if the hazard reduction or abatement has been completed. Failure to disclose these test results is a violation of the U.S. Department of Housing and Urban Development and the U.S. Environmental Protection Agency regulations at 24 CFR Part 35 and 40 CFR Part 745 and can result in a fine of up to $11,000 per violation. To find out more information about your obligations under federal lead-based paint requirements, call 1-800-424-LEAD.

Appendix O
X-RAY FLUORESCENCE (XRF) DEVICE REGULATORY GUIDE

Virginia Department of Health - Radiological Health Program
109 Governor Street, Room 730
Richmond, VA 23219

Telephone: (804) 864-8150
FAX: (804) 864-8165

Revised:
January 30, 2004

A. INTRODUCTION

X-Ray Fluorescence (XRF) devices use a small amount of radioactive material, usually 10-50 millicuries of either Cobalt-57 or Cadmium-109, to detect and quantify the amount of metals (particularly lead) in paint or soil.

Since they became commercially available in the early 1970's, XRF devices have become increasingly popular for providing a faster, cheaper and non-destructive alternative to laboratory analysis of samples suspected to contain high concentrations of lead.

The Virginia Department of Health's Radiological Health Program (RHP) has prepared this guide to assist potential users of XRF devices in meeting their regulatory responsibilities to insure that the devices are properly licensed and safely operated within the Commonwealth of Virginia. You must apply for and maintain a Virginia license even if you plan to only rent XRF devices and never intend to purchase one.

The Commonwealth of Virginia's Radiation Protection Regulations (VRPR) which were last issued in 1988, cover the regulation of radioactive sources within the Commonwealth. Virginia is not an agreement state with the Nuclear Regulatory Commission (NRC) and only regulates naturally occurring or accelerator-produced radioactive materials (NARM). The NRC is responsible for regulating byproduct, source or special nuclear material.

Because the XRF device, its usage and users are markedly different from most licensees regulated by RHP, several regulations are exempted or interpreted differently for these devices and their operators. These differences will be highlighted in this guide and will eventually be incorporated into a separate section dealing specifically with XRF devices in future revisions of the VRPR.

This Regulatory Guide discusses the radioactive materials licensing procedure, record keeping requirements and additional responsibilities that will be expected of the XRF licensee.

1. RADIOACTIVE MATERIALS LICENSE APPLICATION PROCEDURE

1.1 How to Obtain a Radioactive Materials License Application

You may only obtain a Radioactive Materials (radmat) License if you already have or plan to open an office within the borders of Virginia, where you will be expected to store the XRF device(s) and all relevant records. A Radioactive Materials (radmat) License Application may be obtained by contacting the Virginia Department of Health's Radiological Health Program, P.O. Box 2448 Room 240 Richmond, VA 23218. The telephone number is (804) 786-5932 and the Fax number is (804) 786-6979. There are currently no fees charged for any radmat licensing services, but that may change in the near future should Virginia choose to become an agreement state with the NRC.

1.2 Completing the Radioactive Material License Application for the XRF Device

1.2.1 Training of Authorized Users

All authorized users (including the designated Radiation Safety Officer if he/she intends to use the device) must be trained to properly use the XRF device. All users must attend and submit certificates of completion for the XRF manufacturer's one day training class. In special cases, we may accept classes conducted by a competitor manufacturer's course if the XRF devices are comparable and utilize the same radioactive isotope. This information should also be listed on row 11 b of the application. Any additional training and experience involving radioactive materials should be listed where appropriate in sections 11 and 12 of the application.

All XRF users who intend to test residences for the presence of lead must also be licensed by the Virginia Department of Professional & Occupational Regulation (VDPOR) as either a lead inspector/technician or an inspector/risk assessor. Contact VDPOR at (804) 367-8595 for information on how to obtain this license. **We will be unable to issue a new license or add a new user to an existing license until we receive both the 1-day training course certificate and VDPOR license for each authorized user.** If you wish your Radiation Safety Officer (RSO) to serve strictly in an administrative (non-user) capacity, please stipulate this on the application and all certification and licensing requirements will be waived for that individual. **If you only intend to use the XRF test for the presence of lead in soil, or intend to use the XRF strictly as a metallic alloy analyzer, VDPOR lead licensure will NOT be required for your authorized user(s).**

1.2.2 Radiation detection devices

Radiation detection devices (e.g. survey meters) are not required for licensees who only possess radioactive sources contained within an XRF device. If any survey meters are present on site, describe them in sections 13 and 14.

1.2 3 Dosimetry

XRF operators are required to use film badge dosimeters or Thermoluminescent Dosimeters (TLDs). Direct-reading (e.g."Pocket") dosimeters are **not** required. For section 15, be sure to list the name and address of the company that will be providing your dosimetry services. Although the newer XRF devices are extremely well-shielded, the potential still exists for operators to be exposed to excessive levels of radiation if the device is accidentally damaged or misused.

1.2.4 Security

To prevent unauthorized contact or removal of the device, provisions should be made to keep the device in an unoccupied area behind a locked door. If that is impossible, the device should be kept in an anchored box or cabinet that is properly labeled and padlocked. For section 16, be sure to include a sketch of the floor plan of the facility showing where the XRF device is to be stored when not in use.

1.2.5 Radiation Protection Program

Section 17 refers to a Radiation Protection Program document that should be readily available to all employees. A copy should also be kept with the device at all times. On request, the XRF manufacturer should be able to provide documentation/manual(s) which include a discussion of leak testing, proper operation of the device, personal protection and emergency methods/procedures. At a minimum, these sections may be photocopied and submitted as evidence of your Radiation Protection Program. You may supplement or substitute these procedures with your own as you see fit. A copy of your Radiation Protection Program should be attached to your completed Radioactive Materials License application.

2. XRF LICENSEE RECORD KEEPING REQUIREMENTS

2.1 Registration of purchased XRF devices

Upon purchasing an XRF device, you must provide written notification of the manufacturer, model and serial number to RHP. A facsimile transmission is acceptable. If you only intend to rent XRF devices, this information is not required.

2.2 License amendments

RHP must be promptly informed, in writing, of any changes in license conditions. This would include changes in company name, address, telephone number(s), authorized user(s) and/or Radiation Safety Officer. Upon receipt of any requested changes, this office will amend the license and send written confirmation to the licensee. Failure to keep your license information up to date in a timely manner could result in

forfeiture of the license.

2.3 License renewal

New XRF radioactive material licenses must be renewed every two years. Licenses issued prior to this date will be subject to the 2-year renewal period after the current license expires. You will receive a reminder notification from this office approximately one month before your license expires. It will be your responsibility to send written notification of your wish to renew the license before the expiration date is reached.

2.4 Utilization Log

XRF licensees are expected to track the whereabouts of their XRF device(s) on a utilization log(s), which should be conspicuously posted near where the device is stored. The log should include the following information: 1) the manufacturer, model and serial number of the device 2) the operator's name 3) the location where the device was taken and 4) log-out/log-in dates and times. You may use the form provided by RHP to all new licensees, or design your own.

2.5 Notice to Employees

At least one copy of RHP form RHF-12: "Notice to Employees - Standards for Protection Against Radiation" should be posted in an area that is readily accessible and easily seen by all employees who may have contact with the device. This form is also sent to all new licensees. A copy may be obtained by contacting RHP.

2.6 Leak testing

XRF licensees are expected to test their devices for leakage of radioactivity at intervals not to exceed 6 months. Please see page three of your license and/or contact the XRF manufacturer for additional details on how to perform leak tests. Records of these leak tests and their results should be maintained on file at the address listed on the license and kept available for inspection. **Prior to initiating a permanent change of address, the device(s) and their surroundings (e.g. walls or floors in the storage area) should be swiped using leak-test procedures to confirm that no radioactive contamination remains in the area. Please see section 3.4 of this document for further details**.

2.7 Personal dosimetry

Results of personal dosimetry readings for authorized users must be maintained at the address listed on the license. These records should be easily accessible for inspection and kept on file indefinitely for all employees, including those who have left the company.

2.8 Shipping

All shipping and receiving records regarding the XRF should be kept on file at the

address listed on the license. These records may be monitored to document proper maintenance and repair of the device in addition to insuring that all relevant U.S. Department of Transportation regulations regarding the shipping of radioactive materials are followed. Contact the shipper and/or the XRF manufacturer for details regarding proper shipping and labeling procedures.

3. ADDITIONAL XRF LICENSEE RESPONSIBILITIES

3.1 Virginia Lead Licensing Program

All individuals who wish to perform residential lead inspections or assessments in Virginia must be licensed as either a Lead Inspector and/or Lead Risk Assessor by the VDPOR. RHP periodically shares information regarding XRF authorized users with the VDPOR. Any known XRF users who still lack this licensure and appear on any radmat license issued by RHP prior to December 1, 1997 risk enforcement action by the VDPOR.

3.2 Inspections

Once issued, all conditions of the license will be subject to periodic compliance inspections by RHP. On average, inspections will be performed once each license period which is every 2 years for XRF licenses issued or renewed after 9/1/97. Approximately 10% of these inspections are unannounced. Any job site where the device is being used is also susceptible to possible inspection. If violations are found, a written Notice of Violation (NOV) will be sent by RHP to the licensee by certified mail. The licensee will then have 30 days after receipt of the NOV to respond with a written plan of correction (POC). RHP will then review and either accept or reject the POC. Once the POC has been accepted, a follow-up inspection may be conducted by RHP to confirm that the violations have been corrected.

3.3 Transfer of a Licensed XRF device to other parties

Individuals/companies may not possess an XRF device containing Co-57 or Cd-109 without a valid radioactive material license. Only after confirming proof of licensure may a vendor legally rent or sell a device to you. It is a violation to transfer an XRF device, even for a short period of time, to an individual or company that does not possess a valid Radioactive Materials License.

This office can only provide license verification for businesses within Virginia. If you wish to transfer the device out-of-state, you must first verify that the individual/business that is to receive the device is properly licensed in that state. Whenever transferring a device out-of-state, RHP recommends that a copy of the receiver's radioactive material license be obtained by the sender and kept on file. Providing that *both* parties are properly licensed in Virginia (or elsewhere), temporary rentals or transfers of a licensee-owned device to another individual, company or branch office are allowed without notifying

RHP.

3.4 Change of Address, Termination of License and Permanent Disposal of an XRF Device

If a device owned by the licensee is sold, lost or permanently transferred to another office outside Virginia, RHP must be notified. If the licensee disposes of all XRF devices and has no plans to replace them, the licensee should request that RHP terminate the license.

When permanently disposing of a device/source or moving the device to a new address, a leak test should be performed on the device prior to shipping. If no radioactive devices are to remain in the area, a "close-out" wipe test of all potential contact surfaces within the XRF storage area should also be conducted. These "close-out" wipe test results must be forwarded to RHP and if the results are acceptable, RHP will formally release the area for unrestricted use. **If you are vacating the premises, this written release should be obtained before a new tenant occupies the area.**

As long as the source(s) in your possession is emitting radiation at greater than background levels, you are obligated to meet all licensee responsibilities. To terminate your license, you must choose one of the following options:

3.4.1 You may sell the XRF device to another party that is properly licensed (whether in Virginia or another state).

You should contact the manufacturer of the device and advertise in trade magazines/newspapers to find possible buyers. If you have a device for sale, write or fax RHP with the device details (Manufacturer, Model, Serial #, Source/Last Resource Date, Age/Condition, etc.) and we will provide a list of XRF devices for sale in Virginia to any potential buyers who express an interest.

3.4.2 You may contract with a private radioactive waste disposal company to properly dispose of the source/device.

Unfortunately, this option is cost-prohibitive for most licensees, as the cost may exceed $2000.00. RHP can provide you with a list of waste disposal companies if you desire.

3.4.3 You may return the device to the manufacturer to have the radioactive source removed (desourced).

Contact your manufacturer for details, but in most cases, this is cheaper than disposing of the source yourself (usually from $200-500) and you may still keep the device shell for possible future use or sale. After your device is desourced, leak-testing will no longer be necessary and your license may be terminated. If you wish to retain your license after your devices have been desourced, we will remove you from our inspection list (e.g. "deactivation") upon receiving source removal documentation. You will still be expected to renew your license every two years and notify us when you wish the license to be

reactivated or terminated.

3.4.4 <u>You may continue to possess the device (with source) until it decays to harmless levels.</u>

Although this option may appear to be the cheapest option in the short-term, it necessitates keeping your radmat license active long after the device has been rendered useless by radioactive decay (which usually occurs after only 2 half-lives have elapsed). Before disposing of the device as regular waste, you will be obligated to store it until a survey meter reading of the XRF with its shield in the "open" position shows radioactivity within normal background levels. **Depending on the isotope and the initial activity level, this may require a storage period of 10-20 years**.
If all XRF device sources in your possession have decayed for at least two half-lives and you no longer wish to use XRFs, you may request license deactivation. When a deactivation request is received, we will inspect the device and your documentation to confirm that the device(s) cannot be used. You must then agree not to acquire another device and to store all deactivated XRFs in such a way that they will not be disturbed. Leak testing will no longer be required unless the device is moved to a new location. You will also be excused from further license inspections, although renewal of the license every two years will still be required. You must notify this office if you wish your license to be reactivated or terminated. **When you consider your long-term time and effort along with the likely implementation of fees in the near future for all radmat licensing services, this option may prove to be more expensive than desourcing.**

3.5 <u>Suspected or known abuse of XRF licensing regulations</u>

If you suspect an individual or company is offering and/or performing XRF services without proper licensing or is improperly selling or renting XRF devices to unqualified users, please inform RHP so that we may investigate.

Appendix P

Schneider Laboratories, Inc.
2512 West Cary Street, Richmond, Virginia 23220-5117
804-353-6778 * 800-785-LABS (5227) * Fax 804-359-1475
www.slabinc.com e-mail: info@slabinc.com

Submitting Co.

Project Name
Project Location
Project Number
Purchase Order No.

Special Instructions (include requests for special reporting or data packages)

STATE WHERE SAMPLES WERE COLLECTED

Turn Around Time

[ ] 6-8 hours*
[ ] 24 hours*
[ ] 48 hours*
[ ] 72 hours*
[ ] STANDARD (5 days)
[ ] Standard Full TCLP (10d)
[ ] Weekend*
[ ]

* not available for all tests

Schedule rush organics & weekend tests in advance.

Matrix / Sample Type (Select ONE)

All samples on form should be of SAME matrix type. Use additional forms as needed.

[ ] Air | [ ] Solid
[ ] Aqueous | [ ] Waste
[ ] Bulk | [ ] Wastewater
[ ] FF-Val Filter (PM10) | [ ] Water, Drinking
[ ] FF-Val Filter (TSP) | [ ] Compliance
[ ] Oil | [ ] Wipe
[ ] Paint | [ ] Wipe, Composite
[ ] Sludge | [ ]
[ ] Soil | [ ]

Tests / Analyses (Select ALL that Apply)

Asbestos Air / Fiber Counts

[ ] PCM (NIOSH 7400)
[ ] TEM (AHERA)
[ ] TEM (EPA Level II)
[ ]

Miscellaneous Tests

[ ] Total Dust (NIOSH 0500)
[ ] Resp. Dust (NIOSH 0600)
[ ] Silica - FTIR (NIOSH 7602)
[ ] Silica - XRD (NIOSH 7500)
[ ]

Asbestos Bulk / Asb ID

[ ] PLM (EPA 600 /1993)
[ ] PLM (EPA Point Count)
[ ] PLM (Qualitative only)
[ ] NYELAP 198.1/4
[ ] CAELAP (EPA Interim)
[ ] TEM (Chatfield)
[ ]

FOR ASBESTOS AIR:
TYPE OF RESPIRATOR USED:

Metals-Total Conc.

[ ] Lead
[ ] RCRA Metals
[ ]
[ ]

Metals-Total Conc.

[ ] TCLP / Lead
[ ] TCLP / RCRA Metals
[ ] TCLP / Full (w/ organics)
[ ]
[ ]

ORGANICS TESTS and other Analyses

NOTE: All samples for organics should be kept at 4°C from collection until testing. Schedule rush analyses in advance. Indicate preservatives added & media type.

Indicate analysis method for organics tests.

Sample #	Date Sampled	Time	Sample Identification (e.g. Employee SSN, Bldg Material)	Wipe Area	Type	Time Start	Time Stop	Flow Rate Start	Flow Rate Stop	Total Air Vol	[illegible]					

Sample Collection & Custody Information

Sampled by [NAME] [SIGNATURE] [DATE/TIME] [ ] Sample return requested
Relinquished by [NAME] [SIGNATURE] [DATE/TIME] [ ] Ambient temp [ ] Cool ___ °C
Received by [NAME] [SIGNATURE] [DATE/TIME] [ ] pH ___ [ ] Cl ___ [ ] R [ ] S

[ ] FX [ ] AB [ ] UPS [ ] USM [ ] HD [ ] DS [ ] COURIER

Unusual Sample Condition Noted **WAYBILL #** Chain-of-Custody documentation continued internally within lab

Carefully read the terms and conditions printed on the back of this form.